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369 LEXINGTON AVENUE ... NEW YORK CITY

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Plastic Products

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Courtesy Esquire Magazine

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Volume X

Number 1



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Plastic Products

VOLUME X



NUMBER 1

Program or Pogrom

THE "New Deal" as conceived by the vast majority of Americans who have been so loyally supporting the President is a program for business recovery. As this theory is being worked out it becomes more and more like a pogrom of business as we Americans know it. Virgil Jordan, president of the National Industrial Conference Board, recently summed up this thought: "To me there is nothing more pathetic than to see industrial executives complacently, even enthusiastically, accepting a system of centralized federal control of industry, whose implications for the future are far more serious than anything which can happen to the price of gold."

We share this authority's concern over the great drift away from the old American ideal of free and equal economic opportunity open to all men. We do not, however, fear as he does that American business is going to be regimented into some form of Government-controlled sovietism.

But two contingencies would make any such reconstruction of Ameri-

can business possible: a financial and social chaos more severe than what we have been passing through or a complete change in the temper of the American people. If our economic machine really smashed up, if life as well as property were in real danger, we would willingly forego economic liberty for security on any terms, but except in such extremities American individualism will not long be dragooned.

The enthusiasm Dr. Jordan bewails is but an echo of the weariness and fear bred in all business people during the past four years. Once the new cycle of recovery begins definitely to swing upwards many of the new deal policies will become highly unpopular. Will labor want to work forty hours only when more work at good wages can be had? Would a farmer restrict his acreage if he could sell a bigger crop at a profit? Would a city taxpayer stand for a processing tax which increased his grocery bills? Would you yourself want a cost plus price set by your competitors on the goods you make and sell? The answer to these and a score of similar questions is perfectly plain.

Pyroxylin in the Optical Industry

A Summary and Check-list of Patents

No doubt, the idea of pyroxylin optical frames had its inception from the ancient horn frames made by the Chinese many centuries ago. Thus, pyroxylin frames were at first generally called horn-rimmed frames or glasses. For the past twenty-three years this type of frame has generally been referred to as the "Zylo" frame. Since then this name has been used by practically all the manufacturers of pyroxylin frames, "Zylo" being an abbreviated term taken from the trade name "Zylonite".

From an humble beginning in the eastern part of this country, the use of these frames has spread to every country in the world. From the original shell material, other colors and configurations have been developed in pyroxylin for this particular application. These later colors, and combinations of colors, were crystal, demi amber, and composite sheets of black and crystal. More recently there has been developed a pink transparent and a combination of black and transparent demi effect incorporating the black and transparent formerly made by the composite method.

Replacement of natural shell in optical frames by pyroxylin does not permit the average layman to detect the real from the synthetic. In fact the pyroxylin or "Zylo" frames are superior to the natural material, due to the fact that the material is less brittle, can be mended, softens readily, is easily fitted, and is more comfortable to the wearer.

Pyroxylin Frames As Early As 1879

While pyroxylin has been used in many industries over a period of years, it has probably been used in the optical industry continuously for at least as long as in any other industry. This is evidenced by Patent #220502 issued October 14, 1879, under the title, "Improvement in Frames for Optical Instruments made of Celluloid and Other Fibrous Plastic Compositions." Its general use in the optical industry, however, started about 1909. At first it was used in the form of a thin rim which was slipped over the rimless lenses for two purposes, first, as a protection against lense breakage, and second, to give the eyeglass or spectacle a certain distinguished effect. About 1910 pyroxylin sun-goggles were made, corresponding to the present-day shape of sport goggles worn by the motor cyclists. In 1911 and 1912 the round lense sun-goggles and frames for optical purposes were introduced.

The popularity of pyroxylin frames has continued through the years, due largely to the comfort they provide the wearer, and also the protection the rims give the lenses, plus the fact that they have assumed other characteristics from time to time, such as the introduction of various colors and mottles referred to above. During the past ten years, further developments and improvements by the optical manufacturers have made the so-called "Zylo" frame a product so perfected and so comfortable that it still remains in general demand by the public. It might be of interest to know of these improvements and listed are some of the patents issued during the last twelve years.

Spectacle construction. No. 1,386,068. August 2, 1921. A. E. Maynard to American Optical Co.

Ophthalmic frame. No. 1,440,430. January 2, 1923. W. J. Wrighton to American Optical Co.

Temple for eyeglasses. No. 1,459,778. June 26, 1923. T. Leytham to Shur-On Optical Co., Inc.

Process of producing rims of Celluloid for eyeglasses. No. 1,465,423. August 21, 1923. E. R. Durgin to New Jersey Optical Co.

Process of producing rings of Celluloid for eyeglasses and spectacles. No. 1,465,424. August 21, 1923. E. R. Durgin to New Jersey Optical Co.

Method of making spectacle temples. No. 1,479,936. January 8, 1924. F. A. Stevens to Stevens & Co.

Process of producing ophthalmic mountings. No. 1,494,628. May 20, 1924. H. P. Ravenelle to American Optical Co.

Spectacle temple and method of making the same. No. 1,498,227. June 17, 1924. A. B. Belgard, J. W. Welsh, to Bausch & Lomb Optical Co.

Ophthalmic mounting and method of making. No. 1,546,485. July 21, 1925. F. Fraser to American Optical Co.

Process for making cellulose composition-material spectacle and eyeglass frames. No. 1,559,791. November 3, 1925. E. L. Schumacher to American Optical Co.

Process for making parts for ophthalmic mountings. No. 1,568,629. January 5, 1926. E. L. Schumacher, W. H. Boutelle to American Optical Co.

Demi amber rim and process for production of same. No. 1,571,067. January 26, 1926. E. L. Schumacher to American Optical Co.

Process for producing ophthalmic mountings. No. 1,573,023. February 16, 1926. W. J. Wrighton to American Optical Co.

Eyeglass-rim-forming machine. No. 1,584,283. May 11, 1926. F. Fraser to American Optical Co.

Method of eyeglass construction. No. 1,603,297. October 19, 1926. W. H. Siddall to American Optical Co.

Blank for ophthalmic frames and method of forming the same. No. 1,607,522. November 16, 1926. F. Fraser to American Optical Co.

Process of making ophthalmic mountings. No. 1,608,714. November 30, 1926. N. M. Baker, F. Fraser to American Optical Co.

Method of making ophthalmic mountings. No. 1,628,586. May 10, 1927. O. H. Flodin to Bausch & Lomb Optical Co.

Process of making ophthalmic blanks. No. 1,630,262. May 31, 1927. F. Fraser to American Optical Co.

Ophthalmic mounting. No. 1,510,001. Sept. 30, 1924. W. A. Gunning, to American Optical Co.

Method of making ophthalmic mountings. No. 1,636,335. July 19, 1927. A. L. McKinstry to Bausch & Lomb Optical Co.

Eyeglass construction. No. 1,641,156. September 6, 1927. S. J. Clulee to Bay State Optical Co.

Method of making ophthalmic mountings. No. 1,649,790. November 15, 1927. F. A. Stevens to Bausch & Lomb Optical Company.

Ophthalmic mounting and method. No. 1,668,091. May 1, 1928. F. A. Stevens, J. W. Welsh to Bausch & Lomb Optical Company.

Method of making spectacle temples. No. 1,668,097. May 1, 1928. J. W. Welsh to Bausch & Lomb Optical Co.

Method of making ophthalmic mountings. No. 1,687,960. October 16, 1928. J. W. Welsh to Bausch & Lomb Optical Co.

Method and apparatus for manufacturing frames for sunglass and the like. No. 1,739,696. December 17, 1929. F. Spill to Spill Manufacturing Co. Inc.

Method of manufacturing spectacle frames from tortoise-shell and similar valuable material. No. 1,752,953. April 1, 1930. E. Kahne to Theodor Kahne & Son.

Method of making eyeglass parts. No. 1,825,427. September 29, 1931. W. H. Siddall to Bay State Optical Co.

Plastics' Contribution To Electrical Progress

By Lieut.-Col. K. G. Maxwell
of Metropolitan-Vickers Electrical Co., Ltd.

IN DEALING with the needs of the electrical engineer, the first consideration is one dealing with the reliability of any material employed. This naturally assumes a very serious aspect when large equipments have to be maintained in running order. It is for this reason that a scrutiny of the materials is exceptionally severe when dealing with heavy plant, as, for instance, the generating equipment installed in the large power station.

With heavy plant, mechanical stresses are involved which, though kept within safe designed working stresses, are imposed under elevated temperatures normally of the order of 100° C., and at all times under service conditions the physical properties of the plastic material used must resist distortion or fatigue in its particular use. For instance, synthetic resin sheets used as segmental tooth supports, have to give mechanical stability to the laminations in stator or rotor and to resist fracture from shock or sudden impact under stresses consequent upon the severest conditions of electrical service. Lengthy use at running temperatures must not cause loss of shape or shrinkage, and freedom from atmospheric and moisture effects must be ensured.

Where plastic material used with mica for bonding and insulation purposes respectively is incorporated in the conductor insulation of these large machines; the permanent condition of the composite material in service must be such that the electrical properties can be maintained in the presence of definite mechanical stresses, repeated under service conditions due to the cycle of starting from cold running up to normal running temperatures, stopping and cooling of the machine.

Again, a molding used for both mechanical and electrical purposes when once formed must permanently retain its shape and suffer no shrinkage, be immune from fracture caused by sudden impact, and still retain its insulating properties through the mass, and over the surface under all conditions of service.

With light plant, although in this case a failure may not result in very serious dislocation over a large area of electrical supply, it may still cause cessation of operation of the plant itself.

A small, almost insignificant piece of apparatus may actually control a large generator, and therefore the reliability of a whole power station may be influenced by the performance of a small molded article. The same rigid scrutiny of raw materials and processes in using plastic materials is therefore essential to obtain the resultant satisfactory physical and electrical properties.

Electrical accessories embrace the greatest volume of plastics in their production in a multitude of forms, ranging from elaborate artistic bracket fittings or stand lamps to the smallest form of lampholder or to an eyelet for flexible leads. In this field artistic effect often plays as great a part in design and preparation as the electrical and mechanical properties. The general require-

ments for these parts have been covered by the recently issued British Standards Specification No. 488 for Molded Insulating Materials, but even this specification does not yet deal with arc-resisting moldings or those capable of operating at temperatures exceeding 140° C.

The engineer's use of plastics must always depend upon obtaining the essential property or properties for the particular use in question. A list of these properties, any one or more of which may be the essential feature, includes:—

1. The plastic yield of a material under the influence of heat.
2. The plastic yield of a material under the influence of stress.
3. The ability of a material to withstand certain electrical stresses when in a hot or cold condition.
4. The influence of excessive humidity on the electrical strength values, either on the surface or through the material.
5. The effect of sudden impact.
6. The ability to withstand twisting, or tensile stresses.
7. The ability to withstand fire risks, and the possible self-extinguishing properties associated with the material when once ignited.
8. The ability to withstand heat of the intensity of an electric arc.

In many cases the effect of acidity, alkalinity, immersion in hot water, or hot insulating oil, has also to be known. These properties have also to be studied in their relation to:

- (a) New material as purchased on the open market ready for working into some portion of electrical equipment.
- (b) The same treated material after it has withstood lengthy service conditions.

A definite classification of all moldings is one of the immediate responsibilities of all those who on one side develop and manufacture plastics in their various forms, and on the other side design the particular form in which the plastic is to be applied, as, for instance, in the heavy plant, light plant and accessories already referred to. Those countries which have already adopted classification systems are today reaping the benefit.

An instance of this development is the carbon arc penetration tester now adopted by the E. R. A. in the draft form of the proposed British Standards Specification for non-ignitable or self-extinguishing boards. It will be realized that materials which have to withstand the heat generated between the carbon electrodes are intended for exceedingly severe temperature conditions.

The behavior of a material under impact may be studied by a number of different methods, but perhaps the simplest type of apparatus produced for this work at any given temperature consists of a long tube, down which is allowed to drop a weight from any selected height. The failure by deformation or fracture of a standard specimen under this impact can be registered either as the height necessary to cause failure or in terms of energy

From a lecture delivered by Lieut.-Col. K. G. Maxwell, at the Plastics Exhibition.

dissipated at selected velocity of impact determined by the height.

Another example when using cellulose or allied films, or sheet for insulating material, is the determination of flow point under various temperature conditions. A suitable piece of equipment has been devised, and may become accepted as standard for this purpose. This principally depends upon the distention of the material at gradually rising temperatures under the weight of a steel ball, provided with means of external measurement.

Broadly speaking, a general classification governing the use of plastics for electrical engineering purposes may be indicated as follows:—

Normal temperature conditions.....	Max. temp., 30°C.
Moderate temperature conditions.....	Max. temp., 60°C.
Hot conditions.....	90°-120°C.
Heat-resisting moldings.....	Approx. 300°C.
Flameproof.....	Approx. 500°C.
Arc-resisting moldings (fireproof).....	Red heat

Normal Temperature Conditions (Max. Temp., 30°C.)

A large variety of plastics may be selected for this purpose, due to the elimination of practically all temperature conditions, and in consequence the selection of a suitable material will only have to depend on one of the following features:—

- Mechanical strength.
- Electrical characteristics.
- Artistic value.

Moderate Temperature Conditions (Max. Temp., 60°C.)

The fact that a temperature higher than normal has now to be catered for, immediately results in the elimination of a number of plastics made from low melting point components, such as those employing waxes, pitches, shellacs, etc.

Under this classification the performance of a plastic is complicated by the consideration of its stability at the maximum

temperature contemplated, and for this reason the softening point figures associated with Prof. Marten's softening point tester begin to call for attention.

Hot Conditions (90°C.—120°C.)

Any insulation employed actively on an electrical apparatus must contain perfect reliability at the maximum temperature specified, and since the maximum output of an electrical equipment is limited by the permissible temperature rise, the temperature condition now assumes very considerable importance. A scrutiny of the plastics available soon reveals that the number which can be used under these conditions has now become limited, resulting from the elimination of practically all of those employing waxes, pitches, and even rubber. Some of the low grade synthetic resins will also fail under the temperature conditions now imposed, and in consequence the designer must use higher grade moldings—most of which contain selected synthetic resins.

Heat-Resisting Moldings (Approx. 300°C.)

Materials classified under this heading refer to most of those used with domestic utensils, such as electric irons, kettles, power plugs, adapters, lamp sockets and radiator fittings. The heat associated with the use of these moldings is generally the result of close contact with the source of heat or the generation of undesirable heat, due, for instance, to the difficulty of ensuring good electrical contact in the case of a power plug. The selection of plastics suitable for this purpose is limited almost entirely to a few of the high-grade synthetic resin mixtures specially manufactured for this work, into which is incorporated a high percentage of inert filler, such as mica, asbestos, or possibly slate and marble powders. Where conditions are even more severe and the possibility of reaching a temperature of nearly 200°C. has to be contemplated, the lead borate and mica mixtures,

such as Mycalex, fulfill a valuable requirement.

Flameproof Moldings (Approx. 500°C.)

Materials under this heading are similar to the arc-resisting moldings but have been treated to give better electrical properties under humid conditions, thereby relinquishing their ability to resist carbonization in contact with an arc.

Arc-Resisting Fireproof Moldings (Red Heat)

This last classification caters for the severe conditions which are met whenever power circuit breakers have to operate under full load conditions. The arc-resisting moldings are produced at the instant of breaking the circuit is excessively hot, and although numerous types of magnetic devices are employed so as to reduce the intensity and duration of the arcing period, extensive damage can be done in a fraction of a second unless these special arc-resisting materials are employed, so as to confine the arc within the desired limits.

PRINCIPAL PLASTICS USED IN THE ELECTRICAL INDUSTRY

Natural Group	Form of Product	Typical Applications
Base		
Shellac.....	Bonding Varnish... Molding Mixtures... Tape, Sheets, Tubes	Shellac Bonded Paper Boards, Tubes, Cylinders and High Voltage Bushings. Low Temperature Non-Tracking Moldings. Insulated Wires, Cables, Flexibles, Bus Bars and Guard Rails. Insulating Mats, Gloves, Panels.
Rubber.....	Molding Mixtures... Filling, Impregnating and Sealing Compounds.	Molded Accumulator Cells, Magneto Distributors, Liquid Starter Tanks. Impregnation of Coils, Filling of Ironclad Gear and High Voltage Bushings. Sealing of Cables.
Bitumen.....	Molding Mixtures... Waterproof Seals... Molding Mixtures...	Molded Low Temperature Terminal Blocks. Moisture Protective Coatings. Low Temperature Moldings.
Wax.....		
Synthetic Group		
Phenol Formaldehyde	Resins, Bonding and Treating Varnishes... Molding Powders...	Synthetic Resin Bonded Paper or Fabric Boards, Tubes and Cylinders. Molded Insulators, Links, Barriers, Terminal Boards, Frames, Cases, Dials, and Handles.
Urea Formaldehyde..	Bonding and Impregnating Varnishes... Molding Powders...	Transparent and Opaque Signs, Name and Diagram Plates. Instrument Cases.
Glyptal.....	Resins, Varnishes... Varnish, Sheet, Tape	Heat-Resisting Mica Sheet, Oil-Resisting Gaskets. Motor, Armature and Stator Coil Insulation. Slot Cell, Cable and Conductor Coverings. Insulating Sheaths.
Cellulose.....		
Casein.....	Rods, Sheets and Tubes.....	Insulating Screws or Studs, Switchboard Labels, Cable Identification Rings.

GENERAL CHARACTERISTICS OF ELECTRICAL MOLDINGS

Grade	Color	Base	Max. Temp. °C.	Tensile lbs. sq. in.	Cross Break-ing (in.)	Elec. Thick (in.)	Str. v/m.	Water abs. 24 hrs.	Service
Normal Temperature	Black	Pitch and Wax Mixtures.	30	1450	2900	0.25	100	0.14	Terminal Blocks.
	Brown		30						
Moderate Temperature	Brown	Shellac or Rubber and Selec. Fillers	60	2300	5000	0.27	300	0.21	Magneto Distributors
			60	2300	5500	0.092	300	0.2	
Hot Conditions	Black	Synthetic Resin with Various Fillers	120	7900	10500	0.166	175	....	High Voltage Moldings
	Black or Brown	"	110	8300	8750	0.113	220	....
	Black	"	110	....	7946	0.126	84	0.3	General Purposes
	Mottled	"	110	9300	12000	0.125	75	....	Shock Proof
	Brown	"	105	6600	7500	0.118	100	0.3	Cheap Moldings
	Black	"	90	7100	6700	0.118	90	0.3	
Heat Resisting	Grey	Mycalex	400	7000	9300	0.5	240	0.7	High Frequency Radio Barrier Pieces
Flameproof	Brown	Treated Hydraulic Cement	500	1000	2400	0.5	30	5	
Arc Resisting	White	Hydraulic Cement	Red Heat	1000	2400	0.5	10	14-20	Are Chutes, etc.

Specimens for moderate temperatures and normal temperatures are tested at 20°C.
" " hot conditions are tested at 90°C.
" " heat resisting, flameproof and arc resisting are tested at 180°C.



Plastics on Parade

Features from the
Industry at the
Chemical Exposition.

FROM the plastic point of view, the Fourteenth Exposition of Chemical Industries recently held in the Grand Central Palace, New York City, was extremely interesting as a measure of the achievements developed by the field in the past two years. If the exposition had been held in May as originally planned, it is doubtful if there would have been so many new developments to attract attention, since a great many rapid strides have been made in the last half of 1933.

To pick out some of the most important new developments displayed at the exposition, one would undoubtedly first turn to the growing popularity and usefulness of the cast phenolic material. Three types of these were on display, manufactured by the American Catalin Corporation, Marblette Corporation, and the Catalazuli Manufacturing Company. The Catalin Booth on the Main Floor graphically portrayed the success cast phenolics have had in their application throughout industry. The booth itself was, to a great measure, built of sheets of the material and the objects shown ranged from novelty bracelets to midget radio cabinets.

Marblette showed new applications in the decorative and automotive field, as well as a full line of color samples, while Catalazuli used the larger pieces for display in either a marble or an onyx finish.

There was also a great deal of interest in the new molding compounds and methods of molding. The complete series of impact molding materials developed by Bakelite, which have bridged the gap between the wood-flour-filled materials and the laminated type, were on display for the first time. Bakelite, too, had its

share of cast phenolics to display, introducing the two-tone effect which promises to be so popular in the novelty jewelry field. While the flexible resinoid, also a Bakelite product, was introduced earlier in the year, the samples shown during the exposition elicited much comment because of the wide range of use forecast for this product as an impregnating base. Both Bakelite and General Plastics (Durez) had many samples of finished molded parts generally new to the observer, and Bakelite actually molded some colored boutonnieres with a completely automatic press.

General Plastics' booth was paneled with the recently introduced Haskelite Resin Bonded Wood and an impregnated fabric. This resin bonded wood (used primarily as a plywood) has been one of the outstanding achievements of the plastics field, and the General Plastics' engineers capitalized on the advantages of the resin by comparing the new and the old product under a boiling water emersion test—not at all to the advantage of the old type of plywood!

The Eastman Kodak through their subsidiary, Tennessee Eastman Corporation, made the first showing of the new cellulose acetate plastic Tenite, a colorful, flexible molding compound that has been successfully introduced to many new fields of application. Eastman also showed recent examples of the application of transparent acetate sheeting to the container field.

The Celluloid Corporation, whose comparatively new foil has had such success as a wrapping material, had on display a complete line of this in colors in addition to their acetate sheets, molding compound, and pyroxylin materials. This foil was also





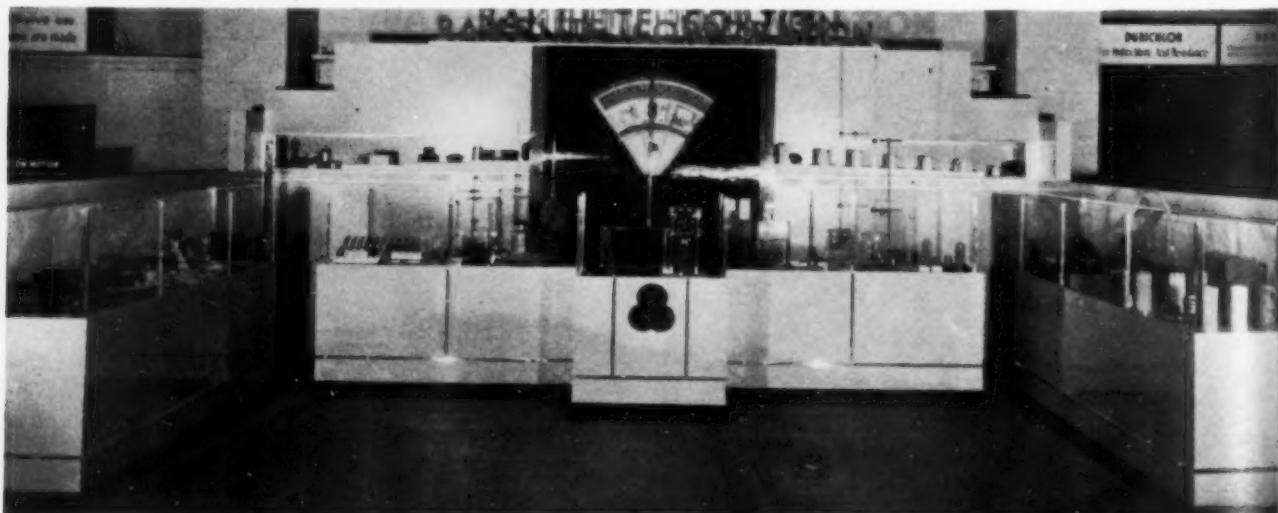
displayed by the Hercules Powder Company who supply the base material.

The Carbide & Carbon Chemicals Corporation, who recently received the first award for Chemical Engineering Achievement, had a complete display of their many new chemical materials such as plasticizers and solvents. Since these are summarized in a separate article in this issue, they will not be detailed here.

In fact, the bulk of the chemical achievements in the past two years for the plastic industry are contained in this separate article. This is an abstract of a catalogue that was issued by PLASTIC PRODUCTS and its companion publication CHEMICAL INDUSTRIES describing the new products developed by the advertisers of both publications since 1931. Each product mentioned in the catalogue was displayed at PLASTIC PRODUCTS' booth on the Main Floor, comprising a veritable gold mine of information. Many of the new products listed earlier in this article were shown in the exhibit, and in addition such items as the wide range of new dyes and pigments, the new urea laminated materials, and the various new lacquer and varnish bases. It is perhaps unfortunate that the General Electric Company did not decide to give over a share of its space to plastics, such as they did at the last exposition, but many of the equipment concerns drew large crowds by featuring the use of their machinery in this industry—such as Fred S. Carver, who actually molded ash trays; F. J. Stokes, whose preforming press was also in production, and many of the testing and recording instrument manufacturers. Among the large chemical concerns, many of whose products are listed in the PLASTIC PRODUCTS' Catalogue, who were also exhibitors at the Chemical Exposition were Commercial Solvents, Dow Chemical, Glyco Products, Quaker Oats, Sharples Solvents and Union Carbide.

Among the well-known individuals in the plastics industry who were seen at the Chemical Exposition during the week were the following: B. S. Covell, and L. J. Hart, Patent Button Company; George Jacobs and his brother of Kuhn & Jacobs; Boyer of General Electric; Maxwell and Goodspeed of Tech-Art; Groos and Scribner of Boonton Molding; Donnigan of Lehn & Fink; Lawrence of American Plastics; Obermeyer of Illinois Testing Laboratories; Cunningham of Bryant; Rodgers and Spitzer of Plaskon; Ellis of du Pont; Herbert Chase; Milano of George Morrell; Rudolph R. Siebert; Allan and Gordon Brown of Bakelite; Harry Dent and Spencer, Dodd and Landscheft of General Plastics; Klein and Raymond of American Record; Dr. Leo H. Baekeland; Dr. N. H. McKee; George Walker of Garfield; Ronald Kinnear of Niagara Insul-Bake; L. Smidth of Aldur; Dr. Carleton Ellis; A. B. Gorde; Frank Shaw of Shaw Insulator; Makeever of Makalot; Richard S. Childs of Beetle; Carpenter of Koppers Products; Leon Quigley; E. J. Luster of American Catalin; Dr. J. G. Davidson of Carbide & Carbon; R. L. Simmons and H. I. Hill of Celluloid; C. L. Gabriel of Resinox; J. P. Wright of Continental Diamond; Harry Seaman of Eastman Kodak; T. D. Darlington and A. B. Nixon of Hercules Powder; Svend and Otto Hansen and C. J. Kelley of Marblette; Dr. F. N. Peters of Quaker Oats.

Immediately following the exposition the display of 304 new chemicals and products gathered by PLASTIC PRODUCTS and CHEMICAL INDUSTRIES was transferred to the Chemists' Club, where it will be on display for several weeks. It will also be shown at several universities and research societies throughout the country, thereby giving an opportunity to those who were not able to get to the Exposition to see these new developments in addition to reading about them.



New Plastic Chemicals



At the Chemical Exposition, PLASTIC PRODUCTS and CHEMICAL INDUSTRIES collected from their advertisers the new products introduced to commerce by them during 1932 and 1933, and publishes this check-list of these new materials as a catalog of the Plastic Chemicals of that display and an advance supplement of the 1934 edition of the PLASTICS GUIDE-BOOK.

ABALYN—A liq. resin derived from abietic acid. Uses: as resin and plasticizer in nitrocellulose lacquers, in cements, adhesives, etc. The Hercules Powder Co., Inc.

ACETAL—Diethylacetal, Ethylidene Diethylether. $\text{CH}_3\text{CH}(\text{OC}_2\text{H}_5)_2$. Colorless liq., agreeable odor. Sp. gr. 0.8234 (15.6°C.). B. P. 103.6°C. Sol. alcohol, ether; slightly sol. water. Uses: general solvent, brandy flavors, medicinally as a hypnotic. Niacet Chemicals Corp.

ACETAMIDE— CH_3CONH_2 . M. W. 59.05. White cryst. Sp. gr. 1.159. M. P. 81°C. B. P. 222°C. Uses: as solvent, plasticizer, electrolyte; in plastics; organic synthesis. American Chemical Products Co.

ALUMINUM ACETATE 20% SOLUTION—Acetate of Alumina, Red Liquor, Mordant Salts, Printer's Acetate, Liquor Alumini Acetatis. $\text{Al}(\text{OOC.CH}_3)_3$. Water white to pale yellow solution. Sp. gr. 1.09 (20°C.). M. P. -5°C. Misc. water all proportions. Uses: mfr. color lakes, paints and varnishes; mordant dyeing and printing; waterproofing and fireproofing textiles; in paper and leather, embalming, medicine. Niacet Chemicals Corp.

AMYL LACTATE— $\text{CH}_3\text{CHOH.COOC}_5\text{H}_{11}$. Water-white to pale yellow liq. Sp. gr. 0.954-0.966 (20°C.). Distillation 100% between 75-150° at 20 mm. Acidity—neutral to litmus. Ester content at least 95%. Wt. per gal. 7.99 lbs. Available with the amyl group in its various isomeric forms. Uses: as cellulose ester solvent and plasticizer. Sharples Solvents Corp.

AMYL STEARATE— $\text{C}_{17}\text{H}_{35}\text{COOC}_5\text{H}_{11}$. Pale yellow liq. Sp. gr. 0.856 to 0.864 (20°C.). Distillation 100% between 230-270°C. at 30 mm. M. P. 15°C. Acidity as stearic acid not over 2.0%. Ester content 97.5%. Wt. per gal. 7.16 lbs. Available with amyl group present in its various isomeric forms. Interesting where high boiling inert plasticizer is desired. Uses: cellulose ester solvent and plasticizer. Sharples Solvents Corp.

ANHYDROUS ETHYLENE CHLORHYDRIN—Ethylene Chlorhydrin, B-Chloroethanol. $\text{ClCH}_2\text{CH}_2\text{OH}$. Water-white liq., purity not less than 97.5% ethylene chlorhydrin. Sp. gr. 1.0202-1.208 @ 20/20°C. Wt. per gal. 10.06 lbs. Boiling range 122°-135°C. Miscible all

proportions with water. Uses: organic synthesis for introduction hydroxyethyl group, preparation of glycol esters, hydroxypropionic acid, malonic acid, phenyl ethyl alcohol (Oil of Rose), novocaine, indigo. Carbide & Carbon Chemicals Corp.

BENZENE-THIOPHENE FREE—Colorless liq. Sp. gr. 0.884 (15.5°C.). M. W. 78.05. M. P. 5.4°C. B. P. 80.2°C. Industrial product—boiling range not over 2°C. Uses: solvent; reference fuel in anti-knock rating of motor fuel. The Barrett Co.

BLUE TONER #3565—A product of tetramethyldiaminobenzophenonechloride on phenyl-A-naphthylamine by patent process to insure permanency. Uses: dry color lake in plastic and rubber industries. Brooklyn Color Works, Inc.

BUTYL ACETYL RICINOLEATE—Yellow, oily liq., mild odor. Misc. most common organic solvents. Sp. gr. 0.94 @ 20/20°C. Sap. No. 235. Saybolt Visc. 123 sec. @ 100°F. Practically insol. water. Approx. 2% water by vol. dissolves in it. Dist. range 220-235°C. @

3-5 mm. mercury. Acidity approx. 5% calculated as ricinoleic acid. F. P. 110°C. Uses: plasticizer, emulsifier, lubricator, detergent. Commercial Solvents Corp.

BUTYL LACTATE— $\text{CH}_3\text{CHOHCOOC}_4\text{H}_9$. Not less than 95% ester by wt. Water-white, slowly evaporating volatile liq., mild, non-residual odor. Sp. gr. 0.974-0.984 @ 20/20°C. Dist. range 130-200°C. with 90% between 155-195°C. Misc. organic solvents generally. Not subject auto-hydrolysis, nor hygroscopic. Uses: solvent nitrocellulose, oils, dyes, natural and synth. resins; formulation architectural brushing, stencil and imitation suede finish lacquers; spray lacquers to improve gloss, adhesion; anti-skinning agent in and improves flow quick-drying enamels, varnishes. Commercial Solvents Corp.

BUTYL ORTHO BENZOYL BENZOATE— $\text{C}_6\text{H}_5\text{COC}_6\text{H}_4\text{COOC}_4\text{H}_9$. Viscous liq., practically odorless, and non-volatile at ordinary temperatures. Sp. gr. 1.127 (24.2°C.). B. P. 360°C. at 760 mm. Insol: water; very sol: most organic solvents including alcohol, acetone, ethyl acetate, benzol. Uses: as plasticizer. The Calco Chemical Co., Inc.

CAMPHOR, U. S. P.—A synthetic product manufactured from turpentine. In the process, pinene is extracted from turpentine and converted to bornyl chloride, next to camphene, thence to isoborneol and finally to camphor. Synthetic camphor is used largely in the manufacture of pyroxylin plastics. E. I. du Pont de Nemours & Co., Inc.

CAPRYL ALCOHOL—Sec. Octyl Alcohol. $\text{C}_8\text{H}_{18}\text{O}$. Water-white, mobile liq. mild, sweet odor. Non-corrosive. Sp. gr. 0.825. M. W. 130.14. B. P.-C. P. grade 178°-180°C. Pure Grade 174°-185°C. Wt. per gal. 6.8 lbs. Sol: alcohol, ether, organic solvents; insol: water. Uses: mfr. high-boiling esters, octyl acetate, octyl phthalate, etc. solvent; powerful anti-foaming agent. American Chemical Products Co.

CARMINE LAKE #3171—A product of P-toluidine-M-sulphonic acid and hydro-oxy naphthoic acid. Very permanent. Uses: dry color lake for plastic and rubber industries. Brooklyn Color Works, Inc.

CAST RESINOIDS—Basic resinoid is of highly permanent light color, making possible a wide range of color effects. Impact strength high; machining qualities excellent. Fabrication: by machining from heat-hardened cast forms. Uses: for many objects of utility, e. g., jewelry, smokers' articles, lamp stands, boxes, knife handles, gear shift knobs. Bakelite Corp.

CROTONIC ACID—1-carboxy-propylene. $\text{CH}_2\text{CH:CHCOOH}$. White cryst. Sp. gr. 0.973 (15.6°C.). M. P. 72°C.

B. P. 185°C. Sol. water. Uses: mfr. resins and esters; prevent sedimentation and gelatinization of varnish driers in volatile organic solvents. Niacet Chemicals Corp.

CRYSTAL CAUSTIC SODA— NaOH . Contains approximately 76% Na_2O corresponding approximately to 98% NaOH . Uses: as detergent; mfr. soap, dyes, paints, varnishes, toilet preparations, etc; in paper and pulp, printing ink, rubber, and textile industries. Isco Chemical Co., subsidiary of Innis, Speiden & Co.

DIAMYLAMINE— $(\text{C}_5\text{H}_{11})_2\text{NH}$. Sp. gr. 0.7780 (23°C.). M. W. 157. Dist. range 180-235°C. Visc. @ 23°C. 0.01264 Poise. F. P. 124°F. Slightly sol. water. Very basic in its reaction. Reacts with various organic acids, forming interesting emulsifying compounds. Reacts to form various sulfur derivatives used in rubber, mining, steel industries. Contains amyl group in its various isomeric forms. Uses: as solvent oils, resins, many cellulose esters. Sharples Solvents Corp.

DIBUTYL ETHER— $\text{C}_4\text{H}_9\text{OC}_4\text{H}_9$. Water-white, chemically stable liq., mild, ethereal odor. Sp. gr. 0.769-0.772 @ 20/20°C. Dist. range 130-145°C. at least 90% between 138-145°C. F. P. 25°C. Misc. most common organic solvents. Water, dibutyl ether, mutually insol. and immiscible. Not solvent for nitrocellulose even in combination with alcohols. Uses: solvent ester gums, dammar gum, rosin, vegetable and essential oils, many chemical syntheses, also acetic, propionic, benzoic, salicylic, stearic acids; extractant or precipitant many purification processes. Commercial Solvents Corp.

DIETHANOLAMINE— $(\text{CH}_2\text{CH}_2\text{OH})_2\text{NH}$. Straw colored liq. Sp. gr. 1.090-1.100 @ 20/20°C. Wt. per gal. 9.141 lbs. @ 20°C. B. P. 217°C. @ 150 mm. M. P. 28°C. .01 N solution has pH of 8.88. Entirely sol. water; miscible most organic solvents. Uses: absorbent for acid gases; softening and moistening agent; synthesis organic compounds by esterification of the hydroxy groups of Diethanolamine or by its condensation with aldehydes. Carbide & Carbon Chemicals Corp.

DIMETHYLAMINE— $(\text{CH}_3)_2\text{NH}$. Gas, strong ammoniacal odor. Boils @ 7.2-7.3°C. @ 764 mm. mercury. Readily sol. water. Product of high purity supplied in water solution of 25-35% concentration by wt. Highly reactive base; forms many interesting complexes with a variety of organic and inorganic substances of an acidic nature. Uses: tanning, rubber industries. Commercial Solvents Corp.

DIMETHYL PHTHALATE— $\text{C}_6\text{H}_4(\text{COOCH}_3)_2$. Water-white, pale, straw

colored liq., slight odor, low volatility. Sp. gr. 1.185-1.205 @ 20/20°C. Dist. range 268-278°C. @ 760 mm. mercury. F. P. 132°C. Misc. most common organic solvents. Sol: cellulose acetate. High gelatinizing power for nitrocellulose. Uses: solvent acetone; plasticizer cellulose acetate lacquers and plastics, rubber mixtures. Commercial Solvents Corp.

DIPROPYL KETONE—Butyrene. $(\text{CH}_3\text{CH}_2\text{CH}_2)_2\text{CO}$. Colorless liq. Sp. gr. .8162 @ 20/20°C. B. P. 143.4°C. Solubility in water 0.5% @ 20°C. Sol: alcohol, hydrocarbons, and most organic solvents. Uses: in lacquers as high boiling ketone; especially good solvent for Vinylite resins. Carbide & Carbon Chemicals Corp.

DUPRENE LATEX—An emulsion of polymerized chloroprene containing water and stabilizing agents. It can be spun into thread and fabricated in much the same way as natural rubber latex. One of its suggested uses is for impregnating porous materials to render them highly resistant to the action of oils, acids and solvents. E. I. du Pont de Nemours & Co., Inc.

DUPRENE PLASTIC POLYMER—A plastic polymer of chloroprene, which is the reaction product of monovinylacetylene and hydrochloric acid. It is useful for manufacturing super-aging rubber-like products that are highly resisting to the action of oils, solvents, acids and heat. E. I. du Pont de Nemours & Co., Inc.

ETHYL ACETATE— $\text{CH}_3\text{COOC}_2\text{H}_5$. Water-white, volatile liq., pleasant, fruity, non-residual odor. Sp. gr. 0.883-0.888 @ 20/20°C. Acidity not more than 0.2% as acetic acid. Dist. range 70-80°C. not more than 10% below 72°C. F. P. -5°C. 85-88% ester by wt. Misc. all proportions most common organic solvents. Dissolves nitrocellulose, camphor, many oils, fats, gums, resins, etc. Uses: solvent nitrocellulose lacquers, other types pyroxylin coatings; preparation medicinals, perfumes, flavors, many synth. products. Commercial Solvents Corp.

ETHYL CROTONATE— $\text{CH}_3\text{CH:CHCOOC}_2\text{H}_5$. Colorless liq., pleasant odor. Sp. gr. 0.923 (15.6°C.). B. P. 136-138°C. Misc. alcohol, ether, various other esters. Uses: general solvent. Niacet Chemicals Corp.

ETHYL ORTHO BENZOYL BENZOATE— $\text{C}_6\text{H}_5\text{COC}_6\text{H}_4\text{COOC}_2\text{H}_5$. White, cryst. solid; practically odorless, colorless, and non-volatile at ordinary temperatures. M. P. 56-58°C. B. P. 325°C. at 760 mm. Insol: water; very sol: most organic solvents, including alcohol, acetone, ethyl acetate, benzol. Uses: as plasticizer. The Calco Chemical Co., Inc.

FLEXIBLE COATING RESINOID—Highly resistant to oils, common solvents,

and mild acids and alkalis. Retains flexibility indefinitely. Fabrication: applied by calendering. Uses: as flexible fabric-coating material for exacting uses, most prominent of which is that of a waterproof back for surgeons' plaster. Bakelite Corp. (Developed in collaboration with Johnson & Johnson.)

GERANIUM #360—A product of brominated fluorescein, fugitive to sunlight. Uses: dry color lake for plastic and rubber industries. Brooklyn Color Works, Inc.

GERANIUM #1196—A product of anthranilic acid and beta naphthol disulphonic acid R. Very permanent. Uses: dry color lake for plastic and rubber industries. Brooklyn Color Works, Inc.

GREEN #3566—A product of Acid Green—fugitive. Uses: dry color lake in plastic and rubber industries. Brooklyn Color Works, Inc.

GREEN TONER #2038—A product of Malachite Green by patent process to insure permanency. Uses: dry color lake in plastic and rubber industries. Brooklyn Color Works, Inc.

GREEN TONER #2741—A product of Acid Green—fugitive. Uses: dry color lake in plastic and rubber industries. Brooklyn Color Works, Inc.

GREEN TONER #2937—A product of Malachite Green by patent process to insure permanency. Uses: dry color lake in plastic and rubber industries. Brooklyn Color Works, Inc.

GREEN TONER #3269—A product of Acid Green combination. Fairly permanent. Uses: dry color lake in plastic and rubber industries. Brooklyn Color Works, Inc.

HERCOLYN—A water-white, viscous liq. resin and plasticizer derived from the alcoholic esters of abietic acid. Adapted to nitrocellulose lacquers for coating papers and fabrics. The Hercules Powder Co., Inc.

IMPACT MOLDING MATERIALS—Series of molding materials which in impact strengths and molding qualities bridge the gap between the wood flour-filled materials, with their relatively low impact strengths and good molding qualities, and the laminating materials, with their high impact strengths and limited molding possibilities. Fabrication: by hot-molding in steel dies. Uses: as material of molded objects that must withstand rough handling. Bakelite Corp.

ISOPROPYL ACETATE— $\text{CH}_3\text{COO}.\text{CH}(\text{CH}_3)_2$. Water-white liq. containing not less than 95% ester by weight. Sp. gr. .870 to .875 @ 20/20°C. Boiling range

86-90°C. Wt. per gal. 7.271 lbs. @ 20°C. Miscible all proportions with gasoline (60°Bé.); completely miscible with the commonly used organic solvents; sol. water to extent of 4.5% @ 27°C. Uses: mfr. nitrocellulose lacquers and dopes, pyroxylin plastics, waterproof cements, thinners, organic chemicals. Carbide and Carbon Chemicals Corp.

MABELITE PIGMENT—An intimate, reddish-brown mixture, produced by nature, of fine argillaceous hematite, cryst. silica and alumina. Sp. gr. 3.01. Covering power 500 sq. ft. (or more) per gal. Oil absorption 27. One lb. of dry pigment bulks .038725 gals. Non-fading, non-poisonous, non-bleeding, light-proof, acid-resisting, alkali-proof, heat resisting, rust inhibiting, dielectric. Uses: mfr. protective paints and similar products where exceptional resistance to destructive agencies is required. American Cyanamid & Chemical Corp.

MALEIC ACID— $\text{COOH}.\text{CH}:\text{CH}.\text{COOH}$. Solid fused mass. Over 98% pure. M. P. about 136°C. Sol: water, alcohol, ether. Uses: mfr. resins, certain intermediates; dyeing and printing textiles. American Cyanamid & Chemical Corp.

MALEIC (TOXILIC) ACID— $\text{C}_4\text{H}_4\text{O}_4$. White Powder. M. P. 130°-131°C. Density 1.50 at 18.5°C. M. W. 116. Sol: water, alcohol, ether. Uses: mfr. synthetic resins, chemicals, rancidity inhibitor for oils. National Aniline & Chemical Co., Inc.

MALEIC ANHYDRIDE— $\text{C}_4\text{H}_2\text{O}_3$. Small white needle cryst. Over 98% pure. M. P. about 60°C. Uses: mfr. synthetic resins, certain intermediates for dyes. American Cyanamid & Chemical Corp.

MALEIC (TOXILIC) ANHYDRIDE— $\text{C}_4\text{H}_2\text{O}_3$. Nearly white fused product. M. P. 52.6°C. Density 1.42 @ 28°C. M. W. 98. Sol: benzene hydrocarbons, acetone, ethyl ether, chloroform. Uses: mfr. synthetic resins, chemicals. National Aniline & Chemical Co., Inc.

MAROON TONER #754—A product of Tobias Acid and beta naphthol. Very permanent. Uses: dry color lake for plastic and rubber industries. Brooklyn Color Works, Inc.

MAROON TONER #3274—A product of Tobias Acid and beta naphthol. Very permanent. Uses: dry color lake for plastic and rubber industries. Brooklyn Color Works, Inc.

METHYL ACETATE— $\text{CH}_3\text{COO}.\text{CH}_3$. Available in two concentrations—82% and 99% by wt. Both water-white liq. 82%: Sp. gr. .905-.910 @ 20/20°C., boiling range 53°-56°C., wt. per gal. 7.552 lbs. @ 20°C. 99%: Sp. gr. .930-

.940 @ 20/20°C., boiling range 55°-58°C., wt. per gal. 7.779 lbs. @ 20°C. Both miscible all proportions with 60°Bé. gasoline, also alcohol, ether, and most organic solvents; slightly sol. water. Uses: solvent cellulose acetate and nitrate; mfr. artificial leather, plastics, dyestuffs, synthetic perfumes, flavoring extracts; general solvent. Carbide and Carbon Chemicals Corp.

METHYL ACETATE— $\text{CH}_3\text{COO}.\text{CH}_3$. Colorless liq., fragrant, apple-like odor. Sp. gr. 0.939 (15.6°C). M. P. 98°C. B. P. 57°C. Sol: alcohol, ether; sparingly sol: water. Uses: solvent in cellulose ester varnishes and lacquers, nitrocellulose plastics, cosmetics, perfumes, extracts, artificial leather, synthetic dyestuffs, rubber cements. Niet Chemicals Corp.

METHYL AMYL ACETATE—Methyl Isobutyl Carbinol Acetate. $(\text{CH}_3)_2\text{CHCH}_2\text{CHOH}_2\text{OCOCH}_3$. Water white liq. Solubility in water 0.8% @ 20°C. Sol: alcohols, hydrocarbons, most organic liq. Sp. gr. .853-.859 @ 20/20°C. Boiling range 139°-147°C. Acidity less than .02% cal. as acetic. Ester content 88-92%. Flash Point 45°C. Uses: high-boiling lacquer solvent; excellent "blush register". Carbide & Carbon Chemicals Corp.

METHYL AMYL ALCOHOL—Methyl Isobutyl Carbinol. $(\text{CH}_3)_2\text{CHCH}_2\text{CHOHCH}_3$. Water-white liq. Sol: alcohol, hydrocarbons, most organic liq. Solubility in water 1.73% @ 20°C. Sp. gr. .804-.810 @ 20/20°C. Boiling range 128°-131°C. Acidity no more than .05% calc. as acetic acid. Flash Point 46°C. Uses: mfr. lacquers; mutual solvent; preparation synthetic resins. Carbide & Carbon Chemicals Corp.

METHYL ISOBUTYL KETONE (HEXONE). $(\text{CH}_3)_2\text{CHOH}_2\text{COCH}_3$. Water-white liq. Sp. gr. .798-.804 @ 20/20°C. Boiling range 115°-122°C. Acidity not more than .05% calc. as acetic acid. Wt. per gal. 6.6 lbs. Solubility in water 87% @ 20°C. Sol: acetone, alcohol, ether, hydrocarbons, and most organic liq. Flash Point 23°C. Red label. Uses: in lacquers as "medium-boiling" solvent; solvent for cellulose nitrate and resins. Carbide & Carbon Chemicals Corp.

1800 MOLDING POWDER—Very intimate mixture of a phenol-formaldehyde thermosetting resin, wood flour and dye. Under pressure at elevated temperatures softens and flows to take the shape and polish of all types of molds. Sp. gr. 1.36. Transverse strength 12,000 lbs. per sq. in. Bulk factor 9 grams per cu. in. Uses: mfr. bottle closures, electrical fixtures, distributor heads, cosmetic containers, knobs, handles, ash trays, tumblers, telephones, buttons, etc. Resinox Corp.

MONOAMYLAMINE— $C_5H_{11}NH_2$. Sp. gr. 0.7761 (20°C.). M. W. 87. Dist. range 85-106°C. Visc. @ 20°C. 0.01018 Poise. F. P. 45°F. Molar aqueous solution has pH 11.67. This is significant in comparing with a molar solution of ammonium hydroxide having pH 11.62. Contains amyl group in its various isomeric forms. Reacts rapidly with most acids to form salts and soaps. When reacted with high molecular acids, such as Oleic or Stearic, product is misc. with various other organic liq. Solutions produce stable emulsions with water. Uses: textile industry as lubricants; leather finish; in polishes, paper sizes; solvent many organic compounds. Sharples Solvents Corp.

MONOETHANOLAMINE— $(CH_2CH_2OH).NH_2$. Water-white liq. Sp. gr. 1.017-1.027 @ 20/20°C., not less than 90% distilling between 165°-173°C. Wt. per gal. 8.472 lbs. @ 20°C. Completely sol: water, alcohol, most organic solvents. 1% solution has pH of 11.5. Uses: mfr. dye-stuffs, pharmaceuticals, textile compounds, electrolytic condensers, dry cleaning soaps, soluble oils; acid gas absorbent; preparation cosmetic creams, polishes, oil, wax, and solvent emulsions; removal carbon from aluminum pistons of airplane motors; dispersing agent for casein and shellac; penetrant, softening and moistening agent. Carbide & Carbon Chemicals Corp.

MONOMETHYLAMINE— $CH_3N H_2$. Inflam. gas, strong ammoniacal odor. Boils @ -6°C. to -5.5°C. @ 768 mm. mercury. One vol. water @ 25°C. dissolves 959 vols. monomethylamine. Highly reactive base. Product of high purity supplied in water solution of 25-30% concentration by wt. Uses: depilatory tanning industry; mfr. dyes, chemical compounds; in liq. form good solvent for many organic compounds. Commercial Solvents Corp.

NIGHT BLUE #1873—A product of Patent Blue—fugitive. Uses: dry color lake in plastic and rubber industries. Brooklyn Color Works, Inc.

OIL-SOLUBLE VARNISH RESIN, 100% PHENOLIC—Has degree of oil-solubility that gives clear varnishes without necessity of settling or filtering. Gives light colored varnish that shows little or no after-yellowing. In strength, hardness, flexibility, water-, acid-, alkali-, and light-resistance, and in quick drying characteristics is the equal of the darker oil-soluble phenolic resins. Fabrication: by use of regular varnish manufacturing equipment. Uses: with drying oils as the resin ingredient of paints, varnishes, enamels. Bakelite Corp.

ORANGE TONER #3567—A product of O-chloro-M-toluidine-P-sulphonic acid and beta naphthol. Quite permanent.

Uses: dry color lake for plastic and rubber industries. Brooklyn Color Works, Inc.

ORCHID #2093—A product of anthraquinone derivative. Very permanent. Uses: dry color lake for plastic and rubber industries. Brooklyn Color Works, Inc.

PEACOCK BLUE #2179—A product of tetramethyl-diamino-O-chlorotriphenyl-carbinol anhydride by patent process to insure permanency. Uses: dry color lake in plastic and rubber industries. Brooklyn Color Works, Inc.

PENTAPHEN—Para Tertiary Amyl Phenol. $C_5H_{11}C_6H_4OH$. Sp. gr. 0.91-0.94 (95°C.). M. W. 164. Softening Point not less than 80°C. Final Melting Point not less than 88°C. Distillation 95% bet. 250-265°C. Solubility: sol. 10% aqueous KOH. F. P. 256°F. Insol. water; readily sol. most organic solvents. Impurities: non-volatile matter, not over 0.001%. Free Phenol, less than 0.1%. Very small amounts of amyl phenyl ethers and secondary amyl phenol. Uses: mfr. oil soluble varnish resins of phenol-formaldehyde type. Sharples Solvents Corp.

PETREX—A synthetic resin base for the production of varnish materials developed from interaction of terpinene and malainic anhydride. The Hercules Powder Co., Inc.

PHENOLIC DENTURE RESINOID—Molding resinoid free-flowing under initial heat of molding. When molded is hard, strong and rigid at body temperature. Adheres strongly to porcelain or metal of a denture; is resistant to mouth secretions; very low in water absorption, all conducive to comfort and dental hygiene. Fabrication: hot molding in prepared plaster flasks, as in regular dental practice. Uses: all types dental plates. Bakelite Corp.

PHTHALIC ANHYDRIDE (ODORLESS)— $C_8H_4O_3$. White cryst., odorless flake. M. P. 130.84°C. Density 1.527 @ 4°C. Sol: alcohol, ether; slightly sol. water. Uses: mfr. synthetic resins, solvents, plasticizers, chemicals, pharmaceuticals. National Aniline & Chemical Co., Inc.

PIGMENT 10720—A phospho-tungstic acid color of extreme concentration. Used to some extent by the lacquer industries and quite freely by printing ink manufacturers. Paul Uhlich & Co.

PIGMENT BLUE 4721—Used mostly in printing inks; also finding favor in mfr. of various plastic moldings, although it is not classed as a permanent color. Paul Uhlich & Co.

PIGMENT GREEN 1315—A Malachite Green type of lake; not fast to light, but used in printing inks where its fugitive tendencies are not important. Paul Uhlich & Co.

PIGMENT ORANGE 3900—Sometimes known as a Permaton type of color. Suitable for paints, printing inks, lacquers, and some forms of plastic moldings. Paul Uhlich & Co.

PIGMENT YELLOW 4—A toluidine yellow of Hansa type, suitable for practically every color consuming industry. Paul Uhlich & Co.

PLASTIC BLUE #3034—A product of dianisidine and aminonaphthol disulphonic acid—fugitive. Uses: dry color lake in plastic and rubber industries. Brooklyn Color Works, Inc.

POTASSIUM 3-NITROPHTHALIMIDE— $C_8H_3O_4N_2K$. A derivative of phthalic anhydride which reacts with organic halides to form crystalline compounds with definite melting points, by means of which organic halogen derivatives may be identified. Eastman Kodak Co.

PROPYLENE GLYCOL— $CH_3CHOH.CH_2OH$. Colorless liq., practically odorless. Sp. gr. 1.03 (20°C.). B. P. 188°C. Wt. per gal. 8.64 lbs. (20°C.). Completely sol: water. Uses: solvent; moistening agent; mfr. cosmetics, perfumes, flavoring extracts, pharmaceuticals; reagent organic synthesis, having two replaceable hydroxyl groups. Carbide & Carbon Chemicals Corp.

PROPYLENE OXIDE— $CH_3CH_2CH_2O$. Colorless liq. Sp. gr. 0.86 (15°C.). B. P. 35°C. Wt. per gal. 6.9 lbs. (20°C.). Sol: water and usual organic solvents. Uses: solvent nitrocellulose, cellulose acetate, gums, resins; mfr. quick drying cements; mold inhibitor; reagent in organic synthesis. Carbide & Carbon Chemicals Corp.

PURPLE TONER #3571—A product of methyl violet by patent process to insure permanency. Uses: dry color lake for plastic and rubber industries. Brooklyn Color Works, Inc.

RED TONER #18—A product of O-chloro-M-toluidine-P-sulphonic acid and beta naphthol. Quite permanent. Uses: dry color lake for plastic and rubber industries. Brooklyn Color Works, Inc.

RED TONER #203—A product of Tobias Acid and beta naphthol. Very permanent. Uses: dry color lake for plastic and rubber industries. Brooklyn Color Works, Inc.

RED TONER #1540—A product of paranitraniline and beta naphthol. Very permanent. Uses: dry color lake for plastic and rubber industries. Brooklyn Color Works, Inc.

RED TONER #1609—A product of metanitroparatoluidine and beta naphthol. Very permanent. Uses: dry color lake for plastic and rubber industries. Brooklyn Color Works, Inc.

RED TONER #1795—A product of Tobias Acid and beta naphthol. Very permanent. Uses: dry color lake for plastic and rubber industries. Brooklyn Color Works, Inc.

RED TONER #2010—A product of P-toluidine-M-sulphonic acid and hydro-oxy naphthoic acid. Very permanent. Uses: dry color lake for plastic and rubber industries. Brooklyn Color Works, Inc.

RED TONER #2074—A product of P-toluidine-M-sulphonic acid and hydro-oxy naphthoic acid. Very permanent. Uses: dry color lake for plastic and rubber industries. Brooklyn Color Works, Inc.

RED TONER #3179—A product of chlorinated paranitraniline and beta naphthol. Very permanent. Uses: dry color lake for plastic and rubber industries. Brooklyn Color Works, Inc.

RED TONER #3289—A product of anthranilic acid and beta naphthol. Quite permanent. Uses: dry color lake for plastic and rubber industries. Brooklyn Color Works, Inc.

RED TONER 8000—A pure toluidine toner suitable for practically every color consuming industry. Extremely opaque and very permanent under all weather conditions. Paul Uhlich & Co.

RED TONER 9390—A red for Lake C type of pure color. Adaptable all types printing inks; suitable certain types coatings and solid moldings. Paul Uhlich & Co.

827 RESIN COMPOUND—Phenol-formaldehyde condensation product compounded with lubricants and hexamethylenetetramine. Sp. gr. 1.29. M. P. 80°C. Uses: mfr. molding powders. Resinox Corp.

RESIN (SYNTHETIC) DYES—A complete line of coal tar dyes specially mfrd. for plastic compounds. National Aniline & Chemical Co., Inc.

RESINOID-FILLED PAPER AND BOARD—Materials of the laminating type prepared from pulp and resinoid in the process of making paper or board. Fabrication: by hot-pressing. Uses: for panelling or other simple forms. Bakelite Corp.

REZYL 280-1—A hard, alkyd resin made from phthalic anhydride. Uses: in coatings, impregnating compounds, adhesives. American Cyanamid & Chemical Corp.

REZYL 337-2—A liquid alkyd resin made from succinic acid. Uses: plasticizer for cellulose acetate. American Cyanamid & Chemical Corp.

REZYL 1103—A liquid oxidizing type alkyd resin, made from phthalic anhydride. Uses: in air drying; baking enamels and paints. American Cyanamid & Chemical Corp.

SANTICIZER B-16—A phthalyl glycollate plasticizer. $C_6H_4(COOC_2H_5)_2$. Very high-boiling; stable to light, acids and alkalis. Non-toxic. Uses: solvent-plasticizer for cellulose nitrate; also valuable as resin plasticizer. Monsanto Chemical Co.

SANTICIZER E-15—A phthalyl glycollate plasticizer. $C_6H_4(COOC_2H_5)_2$. High-boiling, light-stable, non-toxic. Uses: solvent-plasticizer for cellulose acetate and nitrate; also valuable as resin plasticizer. Monsanto Chemical Co.

SANTICIZER M-17—A phthalyl glycollate plasticizer. $C_6H_4(COOC_2H_5)_2$. High-boiling, light-stable, non-toxic. Uses: solvent-plasticizer for cellulose acetate; also valuable as resin plasticizer. Monsanto Chemical Co.

SEBACIC ACID—Dibasic 10-C Fatty Acid. $COOH.(CH_2)_8.COOH$. M. W. 202.14. Odorless, tasteless, white to cream color cryst. M. P. 127 to 131°C. Insol. water; sol. alcohol, ether, organic liq. Uses: mfr. resins, cosmetics, pharmaceuticals, high boiling esters, high power solvents for nitrocellulose; polymerizes readily to form adhesive, tough, elastic resins. American Chemical Products Co.

SHEETED CHEMICAL COTTON—A purified cotton cellulose made into sheeted form to fit the viscose rayon process. The Hercules Powder Co., Inc.

SUCCINIC ACID— $COOH.(CH_2)_2.COOH$. Pure white cryst., over 98% pure. M. P. 184°C. Uses: mfr. synthetic resins; in perfume esters, medicine; as anti-spasmodic agents, etc. American Cyanamid & Chemical Corp.

SUCCINIC ACID— $C_4H_4O_4$. White cryst. powder. M. P. 185°C. Density 1.564 @ 15°C. M. W. 118. Slightly sol: water, alcohol, ether. Uses: mfr. synthetic resins, chemicals, solvents, pharmaceuticals. National Aniline & Chemical Co., Inc.

SUCCINIC ANHYDRIDE— $C_4H_4O_3$. Nearly white lumps. M. P. 119.6°C. Density 1.104 @ 20°C. M. W. 100. Sol: alcohol, ether; insol: water. Uses: mfr. synthetic resins, chemicals, pharmaceuticals. National Aniline & Chemical Co., Inc.

SYNTHETIC BUTYL ACETATE—Normal Butyl Acetate. $CH_3.COO.C_4H_9$. Water-white liq. Sp. gr. .872-.877 @ 20/20°C. Wt. per gal. 7.290 lbs. (20°C.). Boiling range 115°-130°C. Ester content 88-92% by wt. Miscible all proportions with 60°Bé gasoline and the commonly used organic solvents and diluents. Sol: water to extent .5% @ 25°C. Uses: mfr. nitrocellulose lacquers, thinners, leather and paper coatings, pyroxylin plastics, safety glass, synthetic flavoring extracts

and perfumes; solvent for gums and resins. Carbide & Carbon Chemicals Corp.

SYNTHETIC BUTYL ALCOHOL—Normal Butyl Alcohol. $CH_3.CH_2.CH_2.CH_2OH$. Water-white liq. Sp. gr. .810-.813 @ 20/20°C. Boiling range 115°-118°C. Sol: most organic solvents, and water up to 8% by wt. at room temperature. Uses: mfr. esters, butyric acid and other butyl derivatives, dyestuffs, and color bases; formulation nitrocellulose lacquers, thinners, leather coatings, varnishes, pyroxylin plastics, photographic film; solvent for shellac, gums, oils; mutual solvent; anti-foaming and dehydrating agent. Carbide & Carbon Chemicals Corp.

SYNTHETIC BUTYRALDEHYDE—Normal Butyraldehyde. $CH_3.CH_2.CH_2.CHO$. Water-white liq. having purity of not less than 96% Butyraldehyde. Sp. gr. .813-.817 @ 20/20°C. Wt. per gal. 6.772 lbs. (20°C.). Boiling range 65°-78°C. Miscible water, alcohol, ether, and most organic solvents. Uses: mfr. rubber accelerators, anti-oxidants, butyric acid, organic chemicals, synthetic perfumes, resins. Carbide & Carbon Chemicals Corp.

SYNTHETIC BUTYRIC ACID—Butyric Acid. $CH_3.CH_2.CH_2.COOH$. Colorless liq. not less than 98% butyric acid content. Sp. gr. 0.9579 @ 20/20°C. Wt. per gal. 8.0 lbs. B. P. 163.5°C. Sol: water, most organic liq. Uses: mfr. cellulose esters, butyrates, flavors, ketones. Carbide & Carbon Chemicals Corp.

TEGLAC Z-152—A hard, alkyd type resin made from maleic acid. Uses: in sealers, clear and pigmented lacquers, oleo-resinous varnishes. American Cyanamid & Chemical Corp.

TRIACETIN—Glyceryl Triacetate. $C_3H_5(OOC.CH_3)_3$. Colorless, odorless, slightly viscous liq. Sp. gr. 1.160 (15.6°C.). B. P. 258-9°C. Sol: alcohol, ether; slightly sol: water. Uses: mfr. intermediates: as non-poisonous plasticizer for cellulose esters. Niacet Chemicals Corp.

TRIAMYL BORATE— $(C_5H_{11}O)_3B$. Sp. gr. 0.845 (22°C.). Distillation 100% between 220-280° at 760 mm. Index of refraction 1.4128 (22°). Ester content at least 95%. Wt. per gallon 7.05 lbs. Unstable ester which slowly hydrolyzes on standing. Available with amyl group present in its various isomeric forms. Uses: in varnish formulation in conjunction with dispersing of pigments. Sharples Solvents Corp.

UREA-FORMALDEHYDE MOLDING POWDER—Grade 212-2 Powder. Color - green. Supplied in powder form in a wide range of colors. Sp. gr. (low pigment) 1.48-1.50; (high pigment) 1.54-

1.55. Tensile strength 5,000 to 7,000 lbs. per in. Highly dielectric, heat and water resistant, non-refusible. Uses: general utility and decorative types plastics; especially for premiums. Synthetic Plastics Co., Inc.

UREA-FORMALDEHYDE MOLD-ING POWDER—Grade 212-2 S Gran. Color—green. Supplied in powder form in a wide range of colors. Sp. gr. (low pigment) 1.48-1.50; (high pigment) 1.54-1.55. Tensile strength 5,000 to 7,000 lbs. per in. Highly dielectric, heat and water resistant, non-refusible. Uses: general utility and decorative types plastics; especially for premiums. Synthetic Plastics Co., Inc.

UREA-FORMALDEHYDE MOLD-ING POWDER—Grade 212-2 Powder. Color—ivory. Supplied in powder form in a wide range of colors. Sp. gr. (low pigment) 1.48-1.50; (high pigment) 1.54-1.55. Tensile strength 5,000 to 7,000 lbs. per in. Highly dielectric, heat and water resistant, non-refusible. Uses: general utility and decorative types plastics; especially for premiums. Synthetic Plastics Co., Inc.

UREA-FORMALDEHYDE MOLD-ING POWDER—Grade 212-2 S Gran. Color—ivory. Supplied in powder form in a wide range of colors. Sp. gr. (low pigment) 1.48-1.50; (high pigment) 1.54-1.55. Tensile strength 5,000 to 7,000 lbs. per in. Highly dielectric, heat and water resistant, non-refusible. Uses: general utility and decorative types plastics; especially for premiums. Synthetic Plastics Co., Inc.

UREA-FORMALDEHYDE MOLD-ING POWDER—Grade 212-2 Powder. Color—red. Supplied in powder form in a wide range of colors. Sp. gr. (low pigment) 1.48-1.50; (high pigment) 1.54-1.55. Tensile strength 5,000 to 7,000 lbs. per in. Highly dielectric, heat and water resistant, non-refusible. Uses: general utility and decorative types plastics; especially for premiums. Synthetic Plastics Co., Inc.

UREA-FORMALDEHYDE MOLD-ING POWDER—Grade 212 S Gran. Color—r.d. Supplied in powder form in a wide range of colors. Sp. gr. (low pigment) 1.48-1.50; (high pigment) 1.54-1.55. Tensile strength 5,000 to 7,000 lbs. per in. Highly dielectric, heat and water resistant, non-refusible. Uses: general utility and decorative types plastics; especially for premiums. Synthetic Plastics Co., Inc.

UREA LAMINATED—Laminated by Westinghouse from paper impregnated with Beetle syrup. Synthetic Plastics Co., Inc.

555 VARNISH—Consists of 60% thermo-setting phenol-formaldehyde resin and 40% alcohol. Viscosity 0.75 to 3.50 centipoises. Uses: mfr. strips for refrigerators, wrapped tubes and coils, radio parts, tops for tables, wall panels, impregnated coils, etc. Resinox Corp.

VINSOL—A hard, black, tough, non-tacky oil resistant resin for use in insulating varnishes and compounds, impregnating compositions, lacquers, emulsion paints and thermoplastics. The Hercules Powder Co., Inc.

WOOD FLOUR—Grade "EC". Screen—Ret. 45M—Trace; Ret. 60M—4.6%; Ret. 80M—10.2%; Ret. 100M—27.3%; Through 100M—57.9%; Total 100.0%. Weight per cu. ft. 10.5 lbs. Average moisture 3.8%. Resin content 4.2%. Fibrous in nature. Lends itself readily to dyes or pigments in any composition. Uses: filler plastic molding (Bakelite, Durez, etc.). Becker, Moore & Co., Inc.

WOOD FLOUR—Grade "ECT". Screen—Ret. 20M—0.0%; Ret. 35M—0.8%; Ret. 45M—1.2%; Ret. 60M—8.3%; Ret. 80M—28.6%; Ret. 100M—44.8%; Through 100M—16.2%; Total 100.0%. Wt. per cu. ft. 12.8 lbs. Average moisture 5%. Resin control 5%. Lends itself readily to dyes or pigments in any composition. Uses: filler dolls,

wall paper, rubber compositions, dynamite, etc. Becker, Moore & Co., Inc.

WOOD FLOUR—Grade "R". Screen—Ret. 45M—0.0%; Ret. 60M—9.6%; Ret. 80M—20.1%; Ret. 100M—19.6%; Through 100M—50.7%; Total 100.0%. Wt. per cu. ft. 11.5 lbs. Average moisture 4.6%. Resin content 5%. Lends itself readily to dyes or pigments in any composition. Uses: filler inlaid linoleum, rubber compositions, flooring, plastic wood, molded synthetic wood articles, etc. Becker, Moore & Co., Inc.

WOOD FLOUR—Grade "REC". Screen—Ret. 45M—Trace; Ret. 60M—1.8%; Ret. 80M—7.6%; Ret. 100M—22.8%; Through 100M—67.8%; Total 100.0%. Wt. per cu. ft. 9.8 lbs. Average moisture 3.5%. Resin content 3.6%. Very fine and fibrous. Lends itself readily to dyes or pigments in any composition. Uses: filler for special molding applications. Becker, Moore & Co., Inc.

WOOD FLOUR—Grade "RT". Screen—Ret. 20M—0.0%; Ret. 35M—4.5%; Ret. 45M—9.5%; Ret. 60M—33.0%; Ret. 80M—29.5%; Ret. 100M—17.0%; Through 100M—6.5%; Total—100.0%. Wt. per cu. ft. 14 lbs. Average moisture 6%. Resin content 6%. Lends itself readily to dyes or pigments in any composition. Uses: filler hand soap, polishing and cleaning, etc. Becker, Moore & Co., Inc.

1.3.5 XYLENOL—1.3 Dimethyl 5 Hydroxybenzene. Colorless needles. Sp. gr. 1.005 (25°C.). M. W. 122.12. M. P. 64°C. B. P. 219.5°C. Slightly sol. water. Sublimes easily; volatile with steam. Industrial product M. P. 60-64°C. Uses: mfr. resins, disinfectants. The Barrett Co.

YELLOW TONER #3065—A product of nitro-P-toluene-azo acetoacetic anilide. Very permanent. Uses: dry color lake in plastic and rubber industries. Brooklyn Color Works, Inc.

Phenolic Resins from Crude Tar Distillates

Previous efforts to produce resins of the Bakelite type starting direct from crude phenol, cresylic acid and similar tar-distillation compounds has resulted in comparative failure, and the discovery that the substances present in tar acids which hinder the formation of resinous condensation products or impart an objectionable leathery texture to the resin, can be removed by the simple procedure of treating with water or dilute acid or alkali gives rise to a remarkable advance in this research. Small proportions of ammonia and ammonium salts normally present in tar acid distillate, cause the resin to remain in solution in the residual neutral oil. A double purpose is thus served by scrubbing the tar distillates with the aqueous liquor, since at least a part of these undesirable ammonium compounds are thereby removed. A convenient scrubbing solution is five per cent. sulfuric acid,

applied to twice its volume of a low-temperature tar distillate with a boiling range up to 300°C. On standing, the aqueous layer separates out and the washed oil is neutralized with two to four per cent. sodium carbonate solution when no emulsification takes place. The aqueous layer is again separated after standing and the washed distillate mixed with one-third its weight of 40 per cent. formaldehyde and a small proportion of normal sodium hydroxide solution. After boiling for 50 minutes at 97 to 98°C., three layers are formed, the lower one containing the resinous condensation product, while the middle and top layers contain formaldehyde solution and residual oil respectively. Vacuum drying of the separated resin for four hours at 95°C. yields a suitable molding material, which is also applicable to the manufacture of varnishes.

Plastics in Pictures

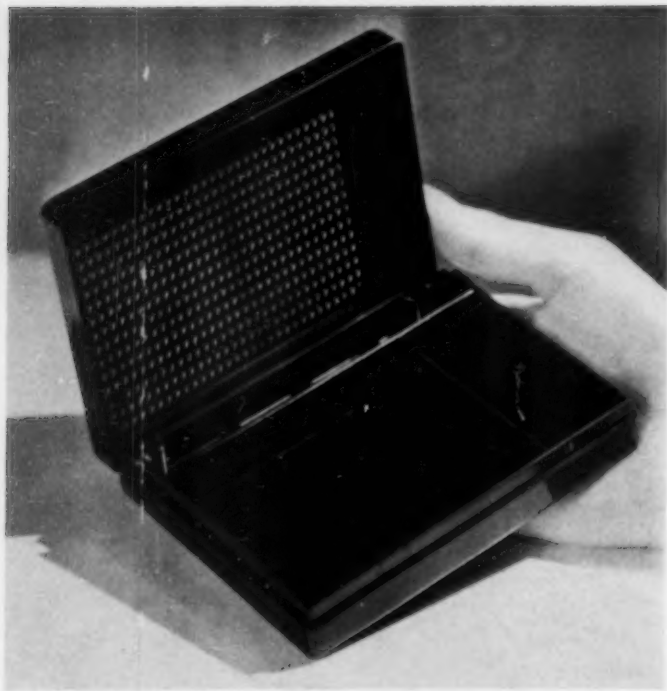


This lighter boasts no flame, flints, batteries, wheels, buttons, or mechanism to get out of order. The lighting element is on the tip of the fuel cartridge and a chemical wick inside it, which is saturated with a special fluid which acts to produce heat when a cigarette is held against the lighting element and puffed. A fluid container molded of Bakelite comes with each Lektrolite, made by Platinum Products.

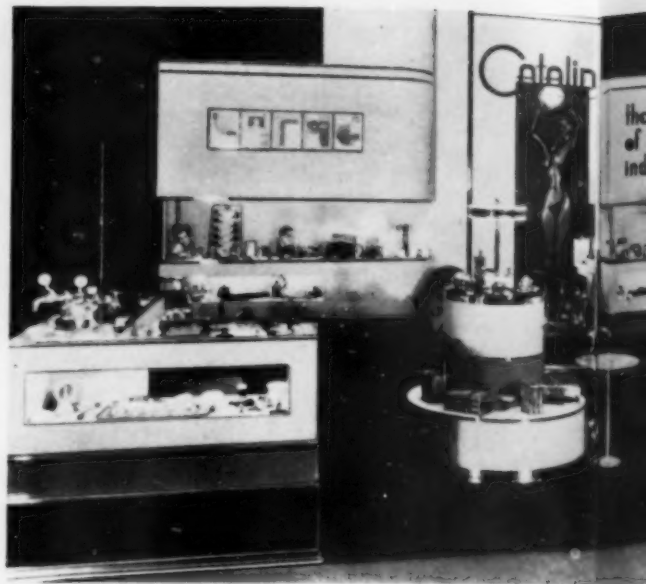
In casting about for a suitable material of the right color and which would mold into the particular design which their needs required, the Game-well Company hit upon the happy idea of using a two-tone Bakelite material, resulting in a very attractive type of automatic fire alarm unit of the appliance type in which Bakelite is used for a large portion of the completed product. This new device can be plugged into a standard electric socket as readily as an electric light bulb. Top, an attic or basement mount. Right, attractive wall mount.



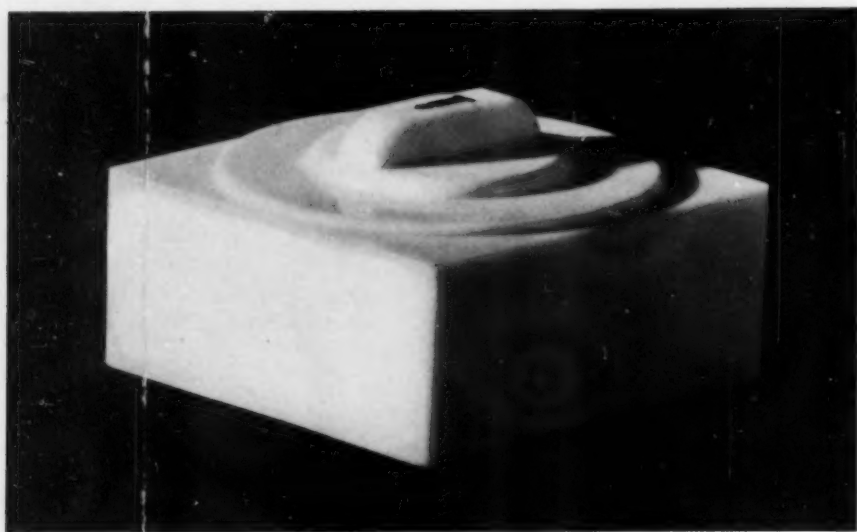
After having decided this is a camera one finds upon investigation that it is a lighter—a novel device with a camera-like case made of Bakelite Molded, finished to simulate leather. It dispenses with wheels, springs and other mechanical parts that cause annoyance to smokers and has been introduced by Match King, Inc.



Filling a long felt want of drug and cosmetic packers this molded Durez container has been brought into being. By ingenious sectional mold construction, this box can be offered as a stock container for vials, small bottles and other products. The cover insignia or name-plate can be varied in many ways, and partitions supplied optionally.



One of the most successful displays at the Chemical Exposition was that of the American Catalin, due in large part to the extensive variety of products exhibited. These were colorfully arrayed on modernistic, store-like counters, readily attracting attention. Samples of the products exhibited are shown in these two picture frames, made of Catalin, in a modernistic design.



The old shaving mug will soon be relegated to the happy hunting ground when shaving bowls like this appear on the market. It is fabricated entirely from Plaskon and is an excellent example of what is now being done in the plastic molding field. Designed and molded by Tech-Art Plastics for Len-theric, Inc.



Eastman Kodak's booth at the Exposition gave the inquisitive public an opportunity to glimpse many chemicals used for various purposes, notable among them being chemicals consumed in the plastics industry. Also one had a chance to see a sample of Tenite, their new cellulose acetate plastic molding compound.

Commercial
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Marblette's contribution to the Exposition attracted considerable notice because of its wide range of new applications in the decorative and automotive fields, as well as a full line of color samples.



A bit of dignified molding from across the water, introduced by the St. Albans Moulding Co., Ltd. This spherical ash tray is of Bakelite Molded, and is exceedingly easy to clean as the two halves screw together.



Commercial Solvents' added greatly to the interest of the plastics industry at the Exposition by their unique, graphic presentation of their chemicals, several of which were plasticizers and solvents made from corn as the raw material.



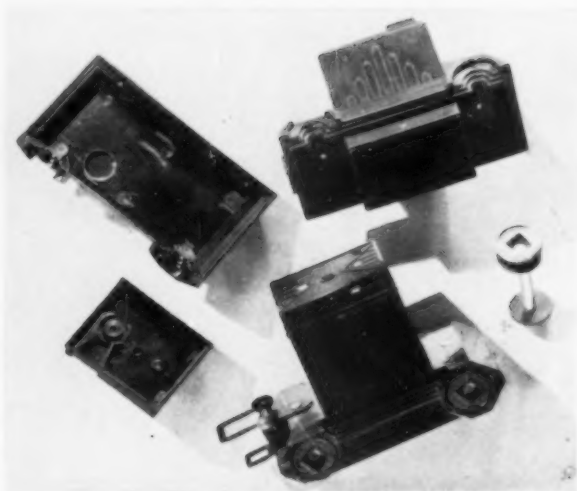


Injecting the "Something-for-nothing" flavor in the introduction of a new product! Frederick Stearns & Co. in presenting their "Thirty-Five" line of men's toiletries give the packaging aspect a new and appealing twist by adding caps molded of Durez, then setting the trio in bases molded of Durez by Norton Laboratories. The trays afterwards serve the purpose of ashtrays.



The unsightly temperature control of yesterday, long the despair of interior decorators, becomes a thing of beauty, harmonizing with room treatment. To the Richardson Co. belongs the credit for this graceful, intricate design, molded of Resinox.

And now, molded camera parts! The first midget camera to be completely molded of plastic material consists of only three molded Durez pieces, and was produced through the ingenuity of the Norton Laboratories.



Courtesy General Plastics

Elevated utility trays, which can be used on cafeteria counters for cakes, etc., or on tables for salt, pepper, sugar and condiments, are the latest development in molded plastics for the hotel and restaurant field. The trays are made in two pieces, the standard and the tray proper, which revolves on the base. Molded of Durez by Mack Molding Co.



Industrial Coatings

A department devoted to the manufacture and industrial applications of lacquers, varnishes, other finishes, coated and impregnated fabrics.

Methylene Chloride

for Quick-drying Lacquers and Varnishes

BY VIRTUE of its good solvent powers for resins and gums methylene chloride is a suitable ingredient for quick-drying lacquers and varnishes. Similarly, it is a useful ingredient of paint removers. Rosin (colophony) solutions are good soldering fluxes, the rapid evaporation of the solvent from the joint by the heat of soldering being a commendable feature. Solvent action upon rubber makes it a possible medium for the application of rubber coverings as surface finish to various articles, and as a vehicle for the incorporation of rubber and mineral oil or jelly to yield vacuum greases, again with the avoidance of using inflammable petroleum media. Admixed with industrial methylated spirit it has solvent powers for cellulose acetate.

A typical continental purchasing specification may be of interest to readers, to which end the following synopsis is given:

Material Required: Methylene chloride corresponding to the chemical formula CH_2Cl_2 , commercially graded as "technical chloride".

General Properties: The material shall be clear and colorless, free from sediment or extraneous dirt.

Specific Gravity: The specific gravity shall be 1.330 approximately at 15.5°C .

Inflammability: The methylene chloride shall not burn even on boiling in an open crucible.

When a glass ring, moistened with the solvent, is held in an oxidizing flame of a Bunsen burner there shall only be an instantaneous luminous flash and a deposit of soot shall be left on the glass.

Fractionation Test: When 100 cc. of the solvent is distilled at a rate of approximately one drop per second fractions expressed as percentages by volume shall be as follows:—

Below 38°C	Nil
From 38 to 39°C	2 per cent.
" 39 " 40°C	14 " "
" 40 " 41°C	80 " "
Above 41°C	4 " "

Residue: The residue upon evaporation of the solvent in an open dish upon a steam bath shall not exceed 0.0050 per cent.

Reaction: The material shall exhibit an entirely neutral reaction.

Packing: Iron containers shall be galvanized and all packages must be efficiently sealed to avoid evaporation losses in transit or storage.

It can be asserted that methylene chloride has good prospects for the future for all general purposes in connection with applied finishes. Its property of non-inflammability places it in the front rank for consideration in general engineering industries where serious thought is given to fire hazards. Particularly is this the case in the wood-finishing departments, which occupy a relatively large amount of floor space and contain large quantities of highly inflammable or combustible materials, including polishes and varnishes and stocks of lumber. Its high rate of evaporation renders it so suitable for the replacement of the volatile petroleum and coal-tar spirits that this feature in conjunction with the avoidance of fire risk makes it inevitable that sooner or later prominence must be given to it. Nor is it a remote possibility that in combination with other solvents or diluents methylene chloride will figure in the make-up of the more ignitable cellulose finishing materials with an advantageous reflection upon their flash points. Admittedly some extensive development work is still necessary in this direction, but manufacturers are not slow to appreciate possibilities and to forge ahead with the appropriate resources. Impetus will undoubtedly be given to work in this direction on account of the renewed energies of Government and official departments into the uses of paint mixtures yielding inflammable vapors. One can also look for some new departures in rubber finishes—and rubber coatings applied from solvent solutions certainly do yield finishes of high durability and protective quality—utilizing this volatile chlorinated hydrocarbon in lieu of the usual inflammable media or in place of the more objectionably smelling chlorine compounds—*Abstracted from Synthetic and Applied Finishes*.

Fast-drying Lacquer

"Tealux", the name of a new quick-drying lacquer manufactured by an Amsterdam concern, is claimed to be dust-dry in less than an hour, and to become hard in six hours, one coat giving a satisfactory cover. It is heat-resistant up to 200°C , and is not affected by boiling water, spirits or mineral oils.

CASEIN PLASTICS

● **NON-INFLAMMABLE**

SHEETS and RODS

- Made in Beautifully Mottled
and Plain Colors

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Plastic Products

Plastic Moldings Finishes

Applying Organic Finishes to Molded Products

THE majority of known classes of lacquer or enamel can be utilized on moldings, with the reservation, in the instances of cellulose acetate, benzyl cellulose, natural resin and bitumen varieties that stoving is not possible, because softening and distortion occur with elevation to even moderate temperature. Again, the plastics of these moldings are soluble in many ordinary organic solvents, and when this is a liability attention must be given to its effect upon the quality and durability of the coating, in addition to the immediate and visually apparent influence upon color and general appearance. For the present consideration will be confined to the group of phenol moldings, and with these noted limitations in mind, the general principles can be extended to the other groups as demanded.

Care in Selection of Finishing Materials

With, of course, exceptions in the case of cracking, crystallizing, brocade and such like enamels, it is an exceedingly desirable point that finishing materials should be selected and finishes applied in such a manner that the natural appearance of a molding is retained, and any impression of a painted surface is minimized to a degree of virtual non-existence. From this standpoint the nitrocellulose enamels in the air-drying range, and the glyptal enamels in the stoving group, lend themselves admirably. They also possess distinctive advantages in other directions. The cellulose products are very simple to apply, and can be controlled to give a range with respect to degree of gloss from full mat finish to those possessing high brilliance. Exceedingly thin coats can be procured, or, on the other hand, finishes can be built up to a considerable thickness, if required. Another quality of vital importance is adherence, with freedom from tendencies to peel away from sharp edges or flake away under impact of normal rough handling encountered in assembly, transport or service. Care in selection of the correct grade of finishing material, and attention to surface preparation and appropriate priming are needed in this respect. If adequacy of control is exercised in these directions no failures occur. Again, cellulose is characterized by yielding very hard, tenacious films, with very good wearing properties. Action of light needs to be considered alongside the latter, when evaluation is made, with particular reference to the colored pigment and its permanence. From the practical point of view of application, obviously rapidity of drying, and the absence of stoving, reflects directly upon the movement of schedules through the shops, and is a factor of enormous importance. This cannot be too highly stressed in the case of molded articles which, after all, are fragile in relation to the work to which the enameller is ordinarily accustomed, namely, metal components, and which may require special operating attention, with lower stoving temperatures, if baking finishes are to be applied. When it is a question of treatment in small quantities,

air driers are naturally favored for their greater convenience rather than suffer the possibility of dislocation of the stoving routines of the mass work.

Degreasers

The glyptal resin base materials are available in two varieties, air-drying and stoving. They are exceedingly durable and adherent, and tend to improve on ageing, rather than the reverse, the film hardening, and becoming more resistant to shock or impact. Imperviousness and resistance to light and heat are outstanding points. Where baking facilities are available, and the stoving types are preferred, glyptal enamels take first place because of the flexibility they offer in stoving conditions. That is, time and temperature may be manipulated to suit the specific case, a temperature range from 150° F. to 350° F., with the appropriate time of two-and-a-half to three hours at the lower figure, and with a gradual corresponding reduction to twenty minutes at the higher value, being possible for the production of fully conditioned coatings. On phenol moldings one or two sprayed coats of these synthetic enamels gives excellent results for appearance, adherence and wear, and surface roughening treatment, such as light sandblasting or sanding is unnecessary. Priming may likewise be dispensed with, and enamel applied direct to the molding with its surface in the naturally polished condition as it comes from the mold. The reservation should be inserted here, however, that should there be a slight contamination with grease, which is usually that due to the slight film of wax used in molding, it is advisable to remove it before applying enamel. Hot chlorinated solvent degreasers may be employed for rigidly designed moldings, providing time of contact with the hot vapors is rigorously controlled, to a minimum. More usually cold solvent is utilized, either coal tar solvent naphtha, or one of the cheap nitrocellulose thinners used.

Actual Finish Depends Upon Use

The composition of the actual finish, that is, the mechanical preparation of the base surface, the priming coat, and the number of finishing coats will naturally depend upon the purpose which the molding and the finish itself are called upon to fulfil. It is naturally impossible to lay down any hard and fast rules, but the recommended procedure for typical classes of work can be given and illustrated. To this end the two groups of finishing materials, namely, air-drying cellulose base and baking glyptals, can be conveniently dealt with in separate sections.

Dealing with nitrocellulose products it is advocated that, in all instances of one-coat finishes, the molding be lightly sandblasted with a fine grain sand at low air pressure. It is essential that this operation is carried out with due operating care, because

FOR CONSISTENT RESULTS IN

Resinox is odorless, water-resistant, and available in a wide variety of colors. Resinox molds perfectly, cures uniformly, and finishes with high luster, beauty, and strength.

KEEP IN TOUCH WITH
RESINOX DEVELOPMENTS

MOLDING
Specify

RESINOX

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Subsidiary of Commercial Solvents Corporation and Corn Products Refining Company
230 Park Avenue, New York City

JOHN J. CAVAGNARO

Engineers and Machinists

Established 1881

HARRISON

NEW JERSEY

Steel Steam Platens

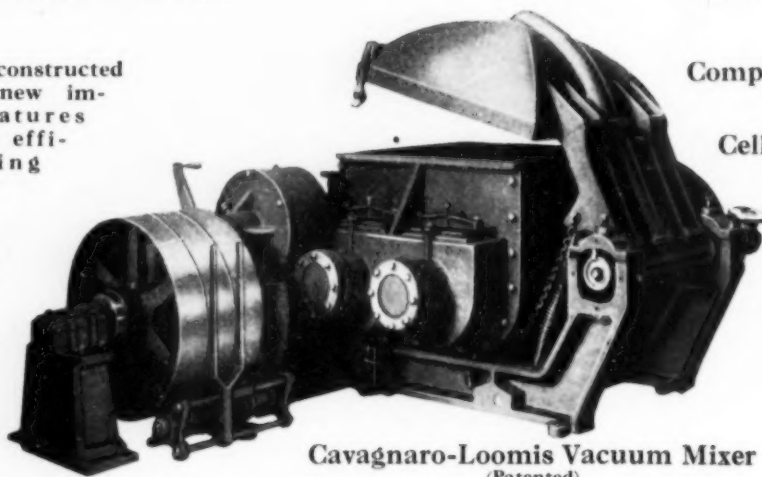
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This mixer constructed with many new important features desired for efficient mixing operations

Belt or Motor Drive

Complete specifications on request

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excessive blasting, whether due to time, pressure or unduly coarse sand, roughens the surface by "opening" it up, particularly if it has a fibrous filler, to such a degree that a single coat of enamel is often out of the question, and even filling is very difficult. Correctly performed, on the other hand, a perfect, uniform mat finish is secured. Sandblasting is still recommended even when multicoat finishes are contemplated. When it is resorted to degreasing can certainly be dispensed with, because the almost insignificant waxiness is insufficient seriously to contaminate the sand. If an oil primer is not intended, and if in this case the nitrocellulose medium is not a fairly heavily pigmented one (metal powders being included in the term pigmented), the sandblasting process is a very durable one. This is particularly so with those blacks which depend for their color and opacity upon soluble dyes, with perhaps also a small percentage of lake. Difficulties with the adherence of black cellulose enamels increase as their degree of matness is increased. On the other hand, with a thin oil priming coat or heavily pigmented cellulose, such as a white or grey, the small improvement in adhesion needs careful consideration against the additional cost involved by the operation for its procurement.

Single Coat Finishes

Single coat finishes are considered sufficient and satisfactory when frictional wear, such as would be involved by repeated handling, is either absent entirely, or only an occasional contingency, and when, from the appearance viewpoint, sharp angular edges are not prominent in association with face surfaces. When such edges are not generously radiused the enamel is rather thinner around them than on other portions, and this, in conjunction with what wear they may be subjected to, causes a tendency for the base color to reflect through the coating. One instance when a one-coat black cellulose finish has been satisfactorily used, is for finishing distribution blocks on exterior surfaces. These items were in effect terminal junction boxes with screw-on covers, about eight inches in diameter, providing for twenty-four circuits. The normal color was a standard brown to tone with the wood of furniture, some items being required in black to line up with the finish of other equipments. Using a selected dull black cellulose enamel, dull black but sufficiently of full matness to avoid adherence troubles, yet at the same time in no way a "bright", an exceedingly tenacious film was secured. No effect could be induced by means of the thumb nail test, even starting from the sharp edge at the base around which the enamel did not extend. This finish withstood the rigorous conditions encountered in assembly, and periodic maintenance to contacts in service without revealing any signs of scratching or chipping. The enamel referred to was purchased in the ready-to-spray condition with characteristics as shown in Table No. 1, but was thinned further to the small extent of about 10 per cent. with a good quality diluent. The light sandblast in this instance contributed to a considerable degree in providing a relatively absorbent surface upon which the enamel could key firmly.

TABLE NO. 1
Dull Black Cellulose Spraying Enamel

<i>Compositional.</i>	
Total solids (nitrocellulose, pigment, plasticizers, etc.)	22.5 %
Ash on incineration	2.25 %
<i>Physical.</i>	
Viscosity at 25° C.	6.50 poises
Specific gravity at 25° C.	0.905

Another instance of a one-coat cellulose enamel finish upon a sandblasted phenol surface is one employing the product characterized in Table No. 2. The white finish obtained was designed for light reflection purposes only, and was applied to one face of the component. The enamel was diluted in the ratio of two volumes to one volume of diluent, and gave only a very slight gloss, the surface being sufficiently smooth to prevent undue accumulation of dust. Once the part was assembled no wear or handling was encountered except possibly an occasional dusting with a camel hair brush.

TABLE NO. 2

White Cellulose Spraying Enamel—Average Characteristics

<i>Compositional.</i>	
Total solids (nitrocellulose, pigment, plasticizers, etc.)	40.0 %
<i>Physical.</i>	
Viscosity at 25° C.	17.5 poises
Specific gravity at 25° C.	1.005

When considerable wear is involved, even though it may only be that involved by intermittent but regular light handling, multicoat finishes are advocated. This recommendation does not detract from the established claim for extremely good hardness and wear-resisting qualities of cellulose film, but bears in mind the fact that around bends the stresses in the coating must be considerable, and continual handling is certain to exert an adverse effect upon these areas. The handle of a molded telephone hand set was finished in imitation oxidized silver to match up with the associated metal parts. It will be appreciated that in addition to extensive handling the effects of perspiration, grease and dirt demand attention in this example. The finish adopted was attained in the following manner: After light sandblasting the surfaces were primed with a thin coating of grey paste filler. This material was applied by spray after diluting in the proportions of one part of filler to four parts by volume of white spirit, four hours then being allowed for drying. If necessary surfaces were lightly flattened with fine abrasive paper. A coat of silver was next applied, this being mixed as required from ½ lb. of fine aluminum powder, and one gallon of spraying cellulose medium, sufficient black cellulose enamel being added to tone down the brilliance. After allowing drying time the black relief and toning was obtained by controlled spray of a thin coat of semi-mat black cellulose enamel, again half-an-hour being allowed for drying. Finally, a thin coat of the cellulose bronzing medium was applied all over, and four hours permitted for drying prior to packing. A very smooth, hard finish was thus obtained, and it resisted inundation by perspiration. Moreover, dirt and grease contamination accumulated in service could easily be removed with a soft cloth moistened with benzene or coal tar solvent naphtha.

Bronze and Gold Finishes

The same procedure, as detailed in the last paragraph, is a suitable one in general for bronze finishes. Thus antique brass and old gold effects are similarly procured. "Gold" itself may likewise be procured, although an additional coat of the gold enamel is advantageous to ensure that, under protection conditions, complete covering of the undercoat is attained.

The grey paste filler mentioned as the priming material, alternatively described as an oil filler, needs careful attention in both selection and use. Fundamentally, it is a heavily pigmented paint of low oil content. The characteristics of one

TABLE NO. 3
Characteristics of a Typical Grey Paste Filler for Undercoating Cellulose

Compositional.	Min.	Max.	Nature
Oil	5.0%	7.0%	Linseed
Pigment	70.0%	80.0%	Lithopone and black aluminum lake.
Spirit	Remainder		White Spirit
Physical.			
Drying time (surface) . .	1 hour		

specially developed to undercoat nitrocellulose are given in Table No. 3. Indiscriminate choice cannot be tolerated because the normal oil undercoating usually causes cellulose films to crack and lift within a few days on account of subsequent movement in the nether film. Again, if success is to attend the application of this paste filler, it must be a smooth grade, easily miscible with white spirit and free from lumps and grittiness. Because of this one usually finds it advisable to purchase in small containers of capacity appropriately proportionate to consumption required for the avoidance of partially used tins being stocked for lengthy periods. The incorporation of the spirit likewise demands efficiency and thoroughness. With appropriate precautionary measures experience enables the filler to be sprayed in thin even coatings which rarely need smoothing down on account of pips or other blemishes.



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With the attractiveness of rapidity of drying and ease of manipulation attendant upon the use of cellulose media, many of the executives in charge of finishing shops dislike the use of oil primers and prefer to standardize throughout upon cellulose media. Obviously, when all the possibilities of rough treatment in service are borne in mind it is appreciated that emphasis must be laid on the care required in selecting the first coating material. Perhaps very much more is it the case with cellulose than with any other finishing media, that adherence of the product seems to vary remarkably with the pigmentation, other things being equal. Of the usual range of colored enamels it has been borne out in practice that greys yield superior results not only in initial adhesion but also in resistance to ageing. The moral is, therefore, to undercoat with an enamel which, from one's experience, has proved durability qualities, and then to surcoat with the appropriate color, if necessary applying a second layer of the latter. Characterizing data pertinent to the grey cellulose enamel mentioned are given in Table No. 4; this material has been used as first coating to those mat blacks which without priming are so notoriously poor with respect to adherence.

TABLE NO. 4

Characteristics of a Grey Cellulose Enamel Suitable as a Priming Coat

	Min.	Max.
<i>Compositional.</i>		
Total solids (nitrocellulose, pigment, plasticizers)	35.0%	
Volatile spirit		65.0%
<i>Physical.</i>		
Viscosity at 25° C.	12.0 poises	
Specific gravity at 25° C.	1.130	1.160

Stoving Enamels

Turning to the second group of materials proposed, namely, the glyptal base stoving enamels, it can be said that the range of finishes practicable, and the service durability attained, are extraordinary, when it is remembered that these products are virtually in their infancy, being a development of the past three to five years. One coat applied directly to surfaces without any special preparation, and sprayed preferably at the higher range of pressures, 40 to 80 lb. per square inch, usually suffices, although two coats can be given with equal simplicity. The most useful stoving conditions are a one-hour period at 250° to 260° F. (120°—130° C.), and this allows steam ovens with their advantages of uniformity and ease of control to be utilized. Metal powders may be incorporated in clear media, of this type again one-coat finishes being used, or, if preferred, a second coat of the "bronze" mixture, or of clear lacquer (stoved in the same manner), may be given. Enamels of this series are very resistant to weathering, and to light; exposure to ultra-violet light test outfits has no effect other than a reduction in gloss, providing the colorant is correctly selected. No hesitancy need be entertained in making a selection from them when service conditions are particularly severe from exposure to heat, light and humidity, or to mechanical stresses of vibration, shock, etc. From point of interest, Table No. 5 contains characteristics of a typical commercial product, a pale green glyptal base enamel, while Table No. 6 characterizes the glyptal base medium for metal powders, and the corresponding top varnish.

On occasions, it is necessary to assemble metal inserts into moldings, screws into countersunk holes for example, and to seal over with insulating compound, and to smooth over the surface neatly to continuity. Shellac cements are frequently used as fillers, *e.g.*, one part of ground shellac, two parts of china clay, and one part of industrial methylated spirit thoroughly incor-

TABLE NO. 5

Characteristics of a Typical Glyptal Stoving Enamel

<i>Physical.</i>	
Color	Pale Green
Specific Gravity at 25° C.	1.190
Viscosity at 25° C.	5.50 poises
<i>Compositional.</i>	
Volatile spirit	44.4%
Pigment	30.0%
Glyptal base	25.6%
Acidity (milligrams of KOH/gram)	10.0

TABLE NO. 6

Characteristics of Commercial Glyptal Products—Medium for Metal Powders and Top Varnish

	Medium	Top Varnish
<i>Compositional.</i>		
Volatile spirit	44.0%	67.5%
Glyptal base	56.0%	32.5%
Acidity, milligrams KOH per gram of base	18.2	20.0
<i>Physical.</i>		
Viscosity at 25° C.	8.5 poises	0.10 poises
Specific gravity at 25° C.	1.045	0.980

porated to a uniform paste. If, after filling, the molding is baked for one to two hours at 100° to 120° C., the glyptal base enamels can be applied over the surfaces after the usual grinding of the areas filled to smoothness.

It is probably not too broad a statement to make that all who use moldings to any extent are concerned with organic finishing problems at some time or another. It may only be a question of recovering damaged components, but always it is a question of economic importance. Lack of appreciation of the necessity for this finishing, or the over-looking of its possibility, has resulted in less attention being afforded to the problem than it merits. In the above, generalities have been dealt with and definite recommendations put forward, and it is hoped that the information will prove useful in aiding the establishment of sound finishing procedure, both from the viewpoint of best selection of materials, and most suitable choice of finish. All problems that are encountered, with only few exceptions, will have their major points of similarity. The generalities exemplified should, therefore, prove of useful guidance to all who have not as yet studied the problem, but who can profitably get into practice in this direction.—*Abstracted from Synthetic and Applied Finishes.*

Lac Research

Recent bulletin issued in India reports research has unearthed interesting details of the retarding effect which pressure has on the time of heating required to cure shellac. A rough classification of substances causing variation in the time of curing has also been attempted. Alkalies and solvents possess retarding influences, while accelerators include acids, ester-forming catalysts, and ammonia and ammonia liberating substances. Research on wax-free shellac points out that in some industries wax is undesirable and is filtered on before use, while others, *i. e.* the gramophone record industry, insist on the presence of a certain amount of wax. Comparison of the properties of varnishes prepared from shellac, with and without filtration of wax, was made. The wax-free film was clearer and more attractive in appearance, less hygroscopic than ordinary shellac, and had as much resistance to ordinary wear and weathering. However, it lacked mechanical strength, chiefly elasticity, which implied that the function of the wax present in shellac is that of a fairly good plasticizer. These facts would serve to support the fact that a wax-free film or one with a low percentage of wax is preferable wherever backing is practicable, *i. e.* in the electrical industry. The concluding suggestion is that in cases where the advantages of a wax-free shellac are wanted but baking is impractical, it may be possible to substitute suitable plasticizers for the natural wax.

Lacquer Coated Resistors

Good resistors of high resistance of the order of 10⁸ to 10¹² ohms have usually been found difficult to prepare. In a recent paper a method of preparation is described which has proved very successful. It consists in coating a pyrex rod with graphite and coating the rod thus prepared with glyptal lacquer. This coating does not alter the value of the resistance, so that the resistance may be adjusted to the value desired before applying the lacquer. The lacquer effectively seals the resistance material against moisture. Such resistors appear to maintain a constant resistance indefinitely.

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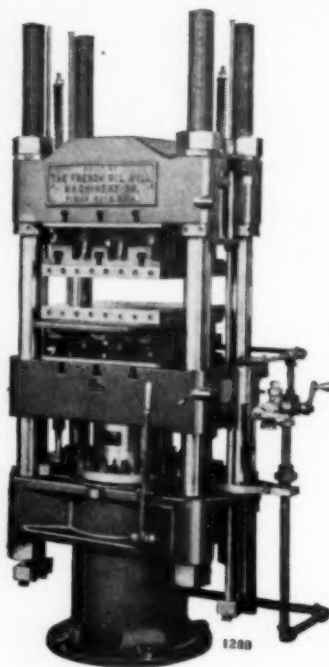
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Plastics and Coating News

Glidden and Jones-Dabney Accept du Pont Lacquer Licenses — Detailed Plans of Packaging Exhibit Announced — Krumbhaar with Beck, Koller — Churchill, Tennessee Eastman, Speaks Before Molders' Representatives — New Process for Coloring Cast Material — Codes Still Unsigned.

Bitterly fought lacquer patent suit between du Pont and Glidden came to a sudden, dramatic end Dec. 7 when the companies reached a settlement out of court. Glidden agreed to accept the licensing agreement.

History of the litigation goes back to '32 when du Pont as a test case to establish the validity of the so-called Flaherty patents filed suit against Glidden. Previously a licensing offer was made by du Pont to all lacquer producers. A number of important manufacturers refused to accept and banded together as the Lacquer Trustees in opposition under the leadership of Frank G. Breyer of Singmaster & Breyer. Suit was 1st tried in Brooklyn District Court in June, '32 and resulted in victory for Glidden. On appeal to the Circuit Court of Appeals du Pont won. Glidden's petition for a rehearing was granted, but the Court late in November, '33 reaffirmed its own decision. Indications strongly pointed to Glidden taking the case into the Supreme Court. Agreement between the companies, announced in Cleveland, was unexpected in most quarters of the lacquer industry and, therefore, came as a distinct surprise.

Immediately following the du Pont-Glidden agreement the former again renewed its licensing offer to the lacquer industry under the same terms as granted to the latter. These terms were announced as follows:

"A payment to us of four and one-half cents (4½¢) on each gallon of the compositions used and/or sold by you and your subsidiaries (if any) embodying the invention or inventions of the Flaherty patent from January 2, 1931, up to and including December 31, 1933. This payment will constitute a complete release from past infringement, of the Flaherty patent and the other lacquer patents mentioned in our lacquer license agreement, by you, your subsidiaries (if any), and your customers of such licensed compositions with respect to which royalties are so paid.

*On Dec. 15 du Pont announced in a formal statement that the stipulation of a minimum license fee of \$3,000 per year has been reduced to \$1,000. Same statement announced that there had been a wide acceptance of the offer by lacquer producers. At the end of the month du Pont reduced drastically still further the minimum fee. Settlement out of court of the Jones-Dabney suit was also announced.

"An agreement by you to accept our standard form of lacquer license agreement (with the reference to Hitt Patent 1,710,453 eliminated from Sections 6 and 9 thereof), whereby you agree to pay a royalty of six cents (6¢) per gallon on every gallon of the licensed compositions used and/or sold by you and your subsidiaries (if any) and embodying the invention or inventions of the Flaherty patent, with a minimum license fee of three thousand dollars (\$3,000) per year, from January 1, 1934, up to the date of the termination of said license*. The agreement will include a provision that you may cancel at your option at the end of any calendar year by giving us sixty (60) days' notice in writing of your intention so to do.

"This offer will expire on December 18, 1933, and any acceptance must be in our hands on that date.

Breyers' Statement

On Dec. 29 Frank G. Breyer made the following statement outlining his present position. "Recent announcements in the press and in trade journals have reported the settlement out of court of the so-called Duco patent suits which were brought by E. I. duPont de Nemours & Co. against the Glidden Co. in New York and the Jones-Dabney Co. in Wilmington. As organizer of the support which was given to these 2 defendants quite generously by the industry, a statement from me at this time is appropriate.

"Few organized movements result in 100% success. The opposition to the duPont proposals of market and price control of lacquer through patent licensing was faced from the beginning with the inherent difficulties which arise when a large number of companies with several different interests at stake get together against a single powerful opponent. In spite of these difficulties, the opposition has benefitted the industry to a substantial extent by its activities.

"For example, some 200 or more smaller producers may now operate by paying duPont \$1,000 instead of \$3,000 per year, thus saving the industry \$400,000 per year. Under the new agreement duPont

waives all claims to back royalties in return for a definite sum and appears disposed to be reasonable in setting the figure that must be paid. Under the terms of the old license agreement, which was in effect before the recent settlements, back royalties were to be rigidly determined and the total amount of liability was left uncertain until after the license had run for five years or the licensee had paid \$50,000 in royalties.

"Furthermore, the scope of the patent monopoly has been very much restricted and what is within the monopoly clearly defined. Of the 5 patents offered in the original license agreement, only 2 were the subject of litigation. One of these, the Hitt patent, has been acknowledged invalid, and the broader claims, Nos. 13 to 16 inclusive, of the Flaherty patent have been disclaimed. The Flaherty patent is the only patent on which royalties are based and the only patent mentioned in the clause of the license agreement which permits price fixing.

"That part of Judge Campbell's decision against the patent in the District Court which deals with the facts has been accepted by most informed lacquer men as correct.

"The decision of the Second Circuit Court of Appeals reversing Judge Campbell and holding certain claims of the Flaherty patent valid is based on a very broad application of the doctrine of commercial success and a conclusion that the prior lacquers could not have succeeded commercially.

"In view of the sudden settlement effected with the defendants, no opportunity exists now to bring either of these suits before the Supreme Court, although other circuits, such as the First in New England and the Seventh in Chicago, have applied this doctrine of commercial success much more sparingly.

"If the control which duPont has obtained through the settlement of the litigation becomes unduly burdensome to producers or consumers, it is entirely possible that a test of the Flaherty patent will be made in some other circuit than the Second or Third which may permit the entire matter to be brought before the Supreme Court for review.

"On the whole, however, material benefits have resulted from the organized opposition. The results are decidedly encouraging to the independent manufacturer and demonstrate that much can be done by cooperative effort even when the difficulties to be surmounted seem at first overwhelming.

"Both licensed manufacturers and those who prefer to operate outside the scope of

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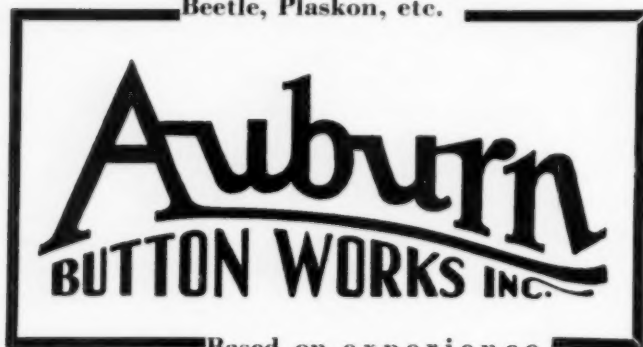
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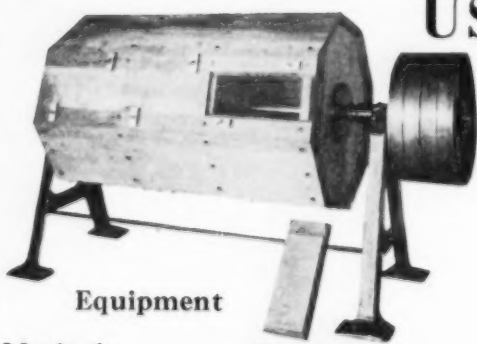
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the patent, as defined by the Circuit Court decision, will continue to benefit. A fund of information concerning both the business and the technical aspects of the matter has been collected and is increasing daily. This is a tool which will hold the patent control within definite limits. It will also be used to keep at a minimum the payments which the industry will have to make because of this patent control."

Higher Lacquer Prices?

It is rumored in the trade that higher prices are to be announced shortly by du Pont. It is said that definite increases in industrial lacquer schedules will become effective Jan. 15.

Packaging Exhibit Details

Judges who will determine winner of the 3rd Irwin D. Wolf trophy to be awarded by the American Management Association for the best package developed and placed on the market between Jan. 1, 1933 and Feb. 15, 1934 are announced by John G. Goetz, managing director of the Association as follows: Ralph Alexander, School of Business, Columbia; Richard F. Bach, director

of industrial relations, The Metropolitan Museum of Art; Alon Bement, director, National Alliance of Art and Industry; Fred G. Cooper, artist; Miss Katherine Fisher, director, Good Housekeeping Institute; W. Gordon Latham, president, Fort Orange Paper Co.; and Miss Harriet Sartain, dean, Moore Institute of Art, Science and Industry.

Packages competing for 3rd Irwin D. Wolf Award, according to Mr. Goetz, will be placed on exhibition by the American Management Association as a feature section of the Fourth Packaging Exposition, sponsored by the Association, in the Hotel Astor, N. Y. City, March 13-16, 1934. Jury of award will select winning package and honorary group awards, and the result will be made public at the opening of the exhibition. Later, competing packages will be displayed for the general public and for selected trade and professional groups.

A Molded Plastic Group

Honorary awards will be made to 15 groups or classes of packages, and the Wolf Award will be made from among the winners of the group of honorary awards. The 15 classifications of packages are announced by Mr. Goetz as follows:

1, tin containers; 2, glass containers; 3, molded plastic containers; 4, wood containers; 5, tubes; 6, visible display packages; 7, paper bags and envelopes; 8, set-up boxes; 9, folding cartons; 10, canisters; 11, family of packages; 12, display containers; 13, packages displaying merchandising ingenuity, regardless of adaptation of art; 14, shipping containers; 15, miscellaneous.

The 6th classification, visible display containers, Mr. Goetz said, is distinct from glass, and covers containers of flexible visible materials, such as transparent cellulose, glassine, etc. By display containers, the 12th classification, he said, is meant display containers that are shipped with a number or assortment of units. It includes set-up containers and those shipped knocked down ready for assembly by the dealer, but does not include display holders or racks that are permanent fixtures.

Under terms of award, "most effective package placed on the market between Jan. 1, 1933 and Feb. 15, 1934" means most effective package "definitely in use in the distribution of a packaged commodity to the consumers thereof," according to Mr. Goetz. He outlined other conditions of the competition as follows:

Packages may be entered by any of the following classes of companies or individuals, whether or not they are members of the American Management Association: (a) manufacturers or distributors of the product contained in the package; (b) manufacturers of packages or materials or equipment used in packaging; (c) package designers; (d) advertising agencies.

In judging entries, jury will place major emphasis upon the aesthetic aspects of the package, taking also into consideration sales effectiveness, utility, the relationship of the package cost to the value of the product, and the appropriateness of the package for marketing the product.

The winner of one honorary award is automatically out of competition for any other honorary award. Any competitor may enter more than one package regardless of class.

Entry blanks and announcements of the award may be obtained from the Wolf Award Administration, Room 1605, 232 Madison ave., N. Y. City, or from John G. Goetz, managing director, American Management Association, 20 Vesey st., N. Y. City.

Coatings

Beck, Koller, Detroit synthetic resin manufacturers, have appointed Dr. Wilhelm Krumbhaar as vice-president in charge of technical development. Dr. Krumbhaar's time will be devoted to technical development work in connection with products sold in the U. S.; and

October Paint, Varnish and Lacquer Sales

October sales of paint, varnish and lacquer products totaled \$18,944,106 in value, according to monthly report of the Bureau of Census from data supplied by 586 establishments. This compared with \$19,097,803 in preceding month and \$15,592,377 in the corresponding month last year. January-October sales were \$190,370,689 against \$181,345,977 in the corresponding period of 1932.

	Total sales reported by 586 establishments		Classified sales reported by 344 establishments		Trade sales of paint, varnish and lacquer		Unclassified sales reported by 242 establishments	
	Paint and varnish	Lacquer	Paint and varnish	Lacquer	Paint and varnish	Lacquer	Paint and varnish	Lacquer
1933—Jan.....	\$11,275,396	\$3,529,886	\$2,386,947	\$1,142,939	\$4,168,260	\$3,577,250		
Feb.....	11,665,734	3,423,033	2,445,378	977,655	4,771,706	3,470,995		
March.....	13,578,568	3,391,947	2,484,550	907,397	5,788,213	4,398,408		
April.....	19,043,787	4,677,309	3,143,803	1,533,506	8,582,411	5,784,067		
May.....	26,241,044	5,991,938	4,298,455	1,693,483	11,788,573	8,460,533		
June.....	27,813,233	6,827,509	4,832,551	1,994,958	12,443,998	8,541,726		
July.....	22,090,187	6,406,184	4,493,516	1,912,668	8,627,400	7,066,603		
August.....	20,620,811	6,323,475	4,754,701	1,568,774	7,840,359	6,456,977		
Sept.....	19,067,803	5,544,686	3,975,917	1,568,769	7,462,113	6,091,004		
Oct.....	18,944,106	4,949,755	3,721,420	1,228,335	7,376,012	6,618,339		
1932—Jan.....	15,894,506							
Feb.....	16,270,822							
March.....	19,089,005							
April.....	22,612,193							
May.....	24,981,441							
June.....	19,637,358	4,685,399	3,617,719	1,067,680	8,734,330	6,217,629		
July.....	14,430,122	3,793,245	2,900,707	892,538	6,058,813	4,578,064		
Aug.....	16,032,441	3,851,028	3,057,096	793,932	6,918,659	5,262,754		
Sept.....	16,805,712	3,980,564	3,113,303	867,261	7,216,748	5,608,400		
Oct.....	15,592,377	3,996,500	3,036,323	960,177	6,610,011	4,985,866		
Nov.....	12,492,818	3,599,319	2,639,362	959,957	5,196,766	3,696,733		
Dec.....	9,484,520	3,222,770	2,186,706	1,036,064	3,506,715	2,755,035		
Totals.....	\$203,323,315							
1931—Totals.....	278,442,170							

Comparable data not available

Third Quarter Lacquer Sales

Sales in 3rd quarter of '33 were 6,568,896 gals., with a value of \$8,890,314 against 5,935,608 gals., valued at \$8,044,479, in preceding quarter and 4,475,293 gals., valued at \$6,867,544 in corresponding quarter of '32, according to preliminary data compiled by Bureau of Census from 102 manufacturers. Sales of finished lacquer, lacquer thinners and dopes, including sales of package goods to jobbers and dealers, during 3rd quarter of '33, comparisons with preceding quarter and '32 sales, follow:—

	Gallons	Dollars	Gallons	Dollars	Gallons	Dollars	Gallons	Dollars
1st quar.....	3,905,846	5,323,315	1,916,350	3,668,615	1,765,148	1,401,624	224,348	253,076
2d quar.....	5,935,608	8,044,479	2,938,643	5,561,381	2,708,268	2,152,168	288,697	331,200
3d quar.....	6,568,896	8,890,314	3,340,182	6,176,543	2,932,826	2,340,847	295,888	372,924
1932								
1st quar.....	4,666,420	6,947,508	2,249,069	4,692,055	2,161,317	1,913,937	256,034	341,516
2d quar.....	4,475,293	6,867,544	2,337,612	4,823,513	1,968,189	1,796,301	169,492	247,730
3d quar.....	3,578,390	5,382,948	1,778,305	3,593,977	1,601,875	1,515,330	198,210	273,641
4th quar.....	3,532,718	5,140,226	1,836,432	3,524,739	1,499,002	1,341,175	197,284	274,312
Total (year).....	16,252,821	24,338,226	8,201,418	16,634,284	7,230,383	6,566,743	821,020	1,137,199
1931								
1st quar.....	5,622,337	9,504,887	2,835,390	6,524,744	2,565,008	2,602,506	221,939	377,637
2d quar.....	6,712,289	10,966,421	3,265,744	7,399,231	3,153,427	3,038,561	293,118	528,629
3d quar.....	5,515,026	8,641,603	2,727,951	5,791,264	2,521,764	2,456,265	265,311	394,074
4th quar.....	4,586,663	7,223,112	2,352,524	5,012,044	2,030,906	1,902,364	203,233	308,704
Total (year).....	22,436,315	36,336,023	11,181,609	24,727,283	10,271,105	9,999,696	983,601	1,609,044

*Does not include base solutions used in the manufacture of lacquers.

†Preliminary.

1931
1932
1933

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he will spend 3 months of each year in a similar capacity in behalf of Beck, Koller & Co. (England) Ltd., whose new manufacturing plant recently began operations



Dr. William Krumbhaar
now with Beck, Koller

at Old Swan in Liverpool. He will also be available for occasional addresses before A. C. S., local Production Clubs, and similar organizations. One of his very recent engagements included a lecture at Yale.

After receiving his Doctor's degree at the famous University of Leipzig, Dr. Krumbhaar began his industrial work as a research chemist, following which he was employed as a factory superintendent for a large European manufacturer, and later operating a paint and varnish plant of his own. He is thoroughly conversant with all of the practical problems confronting formulators in the paint and varnish industry. Dr. Krumbhaar enjoys an international reputation through his work during the last 5 years as head of the Paint & Varnish Institute of Berlin, modeled after the Gardner Institute in Washington; and also through his numerous books on paint and varnish technology and his able contributions to the technical journals in this country and in Europe.

Trigg in Washington

Ernest T. Trigg, National Paint, Varnish & Lacquer Association president, will visit paint production clubs on the

*Pressure of Washington affairs has necessitated postponing Mr. Trigg's Western trip.

Pacific Coast late in January.* Mr. Trigg has severed all active connections with John Lucas but will have the title of chairman of the board. W. A. Gorrell, formerly with S.-W. at Cleveland, has been elected Lucas president. On Dec. 2 Mr. Trigg met in Washington with regional vice-presidents of the Association. At the moment he is directing a special drive for new members.

Personal and Personnel

James L. Parsons, president Pacific Laboratories, and G. Harry Miller, company technical director, were elected members of Portland Paint, Oil & Varnish Club. Pacific Laboratories is the largest lacquer producer in the Far West.

G. K. Heller, 217 N. Calvert St., Baltimore, Md. has been appointed sales representative for Glyco Products, Bush Terminal Bldg., No. 5, Brooklyn.

John W. Schumacher, 235 Woodland ave., Detroit, formerly Acme White Lead chemist and later connected with United Color & Pigment, has been appointed sales representative for Glyco Products. He will specialize in the newer synthetic resins, waxes, and emulsifying agents for Detroit district.

R. B. H. Lacquer Base's president, H. J. Hemingway, has announced appointment of W. S. Edgar, formerly with Flood & Conklin and before that with du Pont, as vice-president and technical director.

Stephen Babcock, formerly in charge of resin sales for John D. Lewis, Inc., is now with General Plastics as special representative handling oil soluble resins.

Dr. Arthur D. Little, U. S. dean of the chemical consultant corps, was 70 years "young" Dec. 15. Greeting his staff on his early arrival for a full days' work he was surprised with the presentation of a specially bound and inscribed volume of the Morse Collection of Japanese Potteries. Actual presentation was made by Roger C. Griffin, director of tests, and a member of the board of directors of Arthur D. Little, Inc. Mr. Griffin is a son of Roger B. Griffin, Dr. Little's original partner when the organization was formed as Griffin & Little in 1886.

Cellulose

Anticipating an early resumption of retail buying of cars, following National Automobile Shows in N. Y. City and Chicago, and a corresponding demand from motor car manufacturers for safety glass for new models, additions to Duplate plant at Creighton are being rapidly pushed to completion, according to H. S. Wherrett, President, Pittsburgh Plate Glass. These additions, which fundamentally are the result of the increased interest and public demand for safety glass, will enable company to step up output of safety glass to well over 160% of present capacity.

Addition to plant takes the form of a 3-story wing, of steel, concrete and brick construction. Increase in floor space enables a rearrangement of equipment that has been revamped and to which has been added specialized machinery built by the Company. Practically every piece of safety glass passing through the production and assembly line is made to order for a particular model of a make of motor car and consequently great flexibility and adaptability are necessary in the equipment, which must lend itself to immediate changes when new models are put into production by the automobile companies. Not only will production be speeded up by the changes in the factory, but a product of greater uniformity will result. Duplate Safety Plate Glass is now used by Pierce-Arrow, Chrysler, Dodge, Plymouth, DeSota, Ford, Reo, Studebaker, Nash, Hudson, Lincoln, Hupp, Stutz and others.

Chas. F. Reeves has been appointed sales manager of the Sheeting Division of Fiberloid Corp. at Indian Orchard, Mass. K. J. Ecklund has been appointed sales manager of Fiberloid's Fabricating and Dental Division.

Following table presents monthly statistics relating to pyroxylin-coated textiles based on data reported to Bureau of the Census by 19 (a) establishments com-

Cellulose Plastic Products (Nitro-Cellulose and Cellulose Acetate Sheets, Rods, and Tubes) October, 1933

Compared with preceding months

Bureau of the Census presents, in following table, monthly statistics on production and shipments of cellulose plastic products (sheets, rods, and tubes), based on data furnished by 8 identical establishments from January to July, inclusive, and by 10 establishments for August, September, and October. Comparable statistics, prior to Jan., '33, segregated for nitro-cellulose and cellulose-acetate products, are not available. Report takes the place of monthly report on "Pyroxylin Sheets, Rods, and Tubes."

Production and Shipments (Pounds)

Year and Month 1933	Sheets		Nitro-Cellulose Rods		Tubes		Cellulose-Acetate Sheets, Rods, and Tubes	
	Production	Shipments	Production	Shipments	Production	Shipments	Production	Shipments
January.....	504,813	625,392	74,872	115,434	12,812	29,329	167,856	160,272
February.....	490,290	593,942	78,904	100,092	16,248	25,711	141,628	125,073
March.....	454,506	611,840	63,188	87,784	17,472	32,525	119,400	117,344
April.....	473,333	624,727	104,817	130,853	26,198	27,091	149,402	211,435
May.....	787,614	774,424	161,784	126,195	32,684	36,992	234,811	221,345
June.....	912,742	959,194	156,830	139,772	41,467	45,057	242,013	220,686
July.....	1,027,812	916,612	158,250	160,851	42,100	41,467	192,381	221,751
August.....	1,290,521	1,257,981	254,249	236,730	40,364	56,142	230,013	231,879
September.....	1,307,052	1,158,080	241,558	232,725	49,263	58,962	213,986	229,629
October.....	1,056,328	991,557	254,375	216,191	76,291	69,258	207,327	217,892



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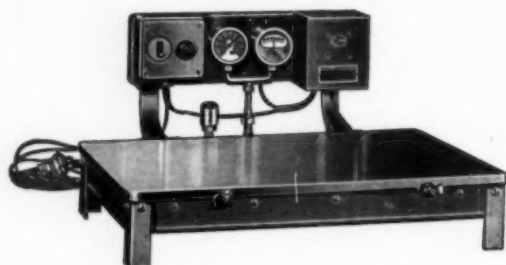
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	1931 October	1932 October	1933 September	1933 October
LIGHT GOODS:				
Shipments—				
Linear yards.....	1,229,082	1,264,053	1,408,728	1,437,746
Value.....	\$309,240	\$267,002	\$365,422	\$385,035
Unfilled Orders (b)—				
Linear yards.....	869,112	733,858	987,025	831,396
HEAVY GOODS:				
Shipments—				
Linear yards.....	954,724	1,017,887	1,309,763	1,140,284
Value.....	\$529,465	\$460,686	\$665,013	\$612,414
Unfilled Orders (b)—				
Linear yards.....	1,310,612	1,362,274	1,672,548	1,724,439
PYROXYLIN SPREAD (c):				
Pounds.....	2,333,175	2,216,415	2,760,809	2,697,212
MONTHLY CAPACITY (d):				
Linear yards.....	*13,032,689	*12,832,689	*12,372,689	12,372,689
(a) Of the 19 establishments reporting for October, 1933, 3 establishments did not report prior to January, 1933.				
(b) Orders on hand at the close of the current month (reported in yards only) exclusive of contracts with shipping dates unspecified.				
(c) Based on 1 lb. of gun cotton to 7 lbs. of solvent, making an 8-lb. jelly.				
(d) Based on a maximum quantity of 1.27 to 1.30 sateen, coated to a finished weight of 17½ ounces per linear yard, in a 24-hour working day, 26 days to a month.				
*Revised. Certain establishments discovered errors in capacity figures previously reported.				

prising most of the industry. Data includes products manufactured by spreading nitrocellulose or pyroxylin preparations, either by themselves or in combination with other materials, upon grey goods, such as sheetings, drills, ducks, sateens, moleskins, etc.

Molded

N. Y. City Molders' Representatives Group met at the Machinery Club for luncheon on Dec. 13. This was the 1st meeting held in several months.

Guest speaker was Robert L. Churchill of Tennessee Eastman, who spoke on the physical and chemical properties of "Tenite," the cellulose acetate molding material now beginning its 2nd year in commercial production. Several samples were shown at the Eastman Kodak Booth at the recent Chemical Exposition and most of those present at the luncheon had previously viewed the display. After the main address Mr. Churchill was asked a number of questions.

Mr. Churchill stressed particularly the great strength and resiliency of Tenite; also that as no solvent was employed no curing was necessary and the material never showed warpage. He reviewed in detail best methods of molding and why. He reported that Tenite can be reworked and that there was very little waste. At least 7 automotive companies have specified Tenite for '34 models for gear-shift handles.

Meeting was presided over by C. J. Groos of Boonton Molding. Those attending were: H. B. McClure, Carbide & Carbon Chemicals; E. W. Falk, G. E.; H. L. Amdury, Kuhn & Jacobs Machine & Tool; L. Gray, N. Klein, and A. J. Raymond of American Record; L. K. Detwiler and F. C. Ryder of Shaw Insulator; F. C. Meacham, Northern Industrial Chemical; and E. M. Robb, T. F. Butterfield, Inc.

Latest issue of the *Durez Molder* (General Plastics) contains a very timely article dealing with the proper storage of molding powders.

Childs On Premiums

Beetleware Corp. is issuing to premium users a colorful catalogue in which are exhibited 75 items representing output of a dozen molders, and covering a variety of articles, mainly tableware. Catalogue cites some of the long runs called for by General Mills, Ovaltine, Grape-Nuts, Swansdown, and others, totaling 16,000,000 pieces.

R. S. Childs, Beetleware president, states: "We figure that urea plastics brought over \$4,000,000 of new business to molders in 1933, enough to make the difference between dull times and the present prosperity in the molding trade. Biggest element was the Beetleware premium business, mostly solicited and booked for various molders by our corporation. This distribution of some 16,000,000 pieces, tumblers, bowls, spoons, mugs, measuring cups, etc. have constituted a vast and wide-spread sampling of American homes with colorful products of the molding industry. Field, however, has only been scratched, and we expect doubled business in '34 in the premium field. Every important premium job in '33 has carried the name "Beetleware" at the insistence of the distributors who find that the public has learned the name, and knows what to expect in the way of the character of the material without cumbersome description and explanations in the advertising or radio broadcasting. In soliciting the business, our travellers carry not only these catalogues, but a great array of samples provided by numerous molders, and new items for additional pages of the loose-leaf catalogue and for travellers' kits are earnestly desired. Some of the molders have been resourceful and alert in devising attractive items in urea plastics for submission to premium users, whereas many others have failed to turn their attention in that direction, leaving us with empty hands, so far as they are concerned. As compared with the 25,000,000 pieces that have been distributed in '33 and '32, and the heavy bookings now in hand, the ultimate business before saturation is reached is somewhere the other side of 200,000,000 pieces, and may

indeed be a long way beyond that because the possibilities for variation in color and design of the urea plastics give the material extraordinarily wide opportunities.

"There was a period when aluminum-ware was new and well understood by the public, yet there were relatively few examples of it in the public's hands. In that period aluminum enjoyed a great vogue for premiums over a period of years, thanks to the combination of its novelty, its real value, and the fact that the shelves were bare. Beetleware is in the same position today. The public knows the material and likes it, but the typical home has only 1 or 2 examples. In consequence the responsiveness of the public to an offering in this material is extraordinary, and persistently runs far beyond the expectations of the experienced merchandisers who make the offers. We are confident, therefore, that '33 will see the new type of material bringing a still larger block of new business to the molding trade. Several of the molders who have developed the urea plastic side of their business have been running at capacity a good part of the time right through the depression. This will continue to be true for them and for others in '34."

Coloring Cast Resins

The Specialty Guild, Boston, reports a new process for coloring synthetic resins of the casting type. Process offers a practical method for coloring synthetic resins of the casting type after they have been fabricated. Result obtained is not merely a surface covering, but the color penetrates the material and permits strenuous buffing. Using white resin as a base, it is possible to get the entire range of colors from jet black to the light pastel shades, with a uniform color on the entire surface. Mottled effects can also be obtained by a modification of the same process.

One advantage which this development offers is that it will enable fabricators to materially cut down their capital investment in raw colored resins of various hues as they will be able to fabricate articles in white and match colors at will and ship out orders the same day they are received. This procedure also eliminates the waste due to inventories of fabricated articles in unwanted colors.

These processes were developed for Specialty Guild by the laboratory of Gustavus J. Esselen, Inc. and application has been made to cover them broadly by patents both in this country and abroad.

New Supplier

Ostolit Corp. has been organized under the laws of N. Y., with a plant at Winchester, Mass., to supply a full range of plastic materials. Emil Jacobsen, formerly in charge of the Panelyte Corp., is

GOOD USED MACHINERY

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1—Colton No. 4½ Tablet Machine, 1½"; 1—Stokes "H" Tablet Machine 2"; 1—Stokes "T" belt driven, up to 1¾"; 1—Fraser belt driven machine, 2" tablet; 1—Colton No. 3 Rotary 16 punch, up to 1".

Several Smaller Machines, Power and Hand.

MIXERS—4—W. & P. Steam Jacketed Mixers, 100 and 150 gals.; 1—Day Mogul 5 Gal. Jacketed Mixer; 1—No. 3 Banbury Mixer; 4—Triumph dbl. arm 200 gal. motor driven.

STILLS—4—Copper, Steam Jacketed Stills, 500, 150, 50 gals.

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president of the new company and A. B. Gordee, well-known in the plastics field, is vice-president and director of research.

Bakelite's Brown Speaks

Bakelite's advertising manager, Allan Brown, spoke on "How We Are Expanding Markets For Our Products" at the monthly luncheon meeting of the American Marketing Society at the Hotel Woodstock, N. Y. City.

New Market For Molders?

President Roosevelt on Dec. 19 created a \$1,000,000 Government corporation to finance and stimulate sale of electrical appliances to power users in homes and on farms.

A lower price for electrical equipment to make it more accessible to power con-

sumers is the objective of the electric home and farm authority which was worked out by David E. Lilienthal, a director of the Tennessee Valley Authority.

Undertaking will be promoted in the Tennessee Valley on an experimental basis as a means of increasing use of the power to be produced in the valley under the government improvement program.

It was stated at the White House by Stephen T. Early, a secretary to the President, that if the proposal proved successful in the Tennessee Valley, it would be placed on a national basis through the attraction and cooperation of private capital.

It was explained there was no intention of taking over the electrical appliances business, but rather of promoting it through government financing and through regular channels.

Code Status

Public hearing on the Plastics Fabricators' Code, held in Washington on Dec. 12 brought out sharp differences of opinion on the labor provisions. Du Pont Viscoloid's president, A. W. Pitcher, also president of the fabricators' group, insisted on the retention of the so-called controversial "merit clause." This same difference of opinion has held up final action on the basic code of the Chemical Alliance. The 5th revision of the latter is now before NRA. Hope of early signing of the Plastics Fabricators' Code now seems to be waning and further conferences between NRA officials and members of the code committee are now apparently inevitable.

Zapon's Rudolph Neuberger spoke on "Distribution and Profits" on Dec. 7 before the Philadelphia Paint & Varnish Production Club.

Plastic Patents

Abrasives

Synthetic resin binder to be transformed by heat and to carry abrasives for use as implement. No. 1,937,043. H. C. Martin, to The Carborundum Co., Niagara Falls.

Cellulose

Cellulose acetate process—formic acid pre-treatment. No. 1,936,189. Applied 1928. Henry Dreyfus, London, Eng.

Saccharification of wood or other material, with hydrolyzation of product. No. 1,926,190. Henry Dreyfus, London, Eng.

Wall-covering material, embossed cellulosic sheet coated by waterproof shellac base emulsified by latex. No. 1,936,355. L. C. Fleck, to Paper Patents Co., Neenah, Wis.

Improved process for preparation of cellulose solutions. No. 1,936,483. Emil Scheller, Lorschach, Germany.

Treatment of cellulosic material and processes for production of cellulose esters, with variations in halides etc. Six patents, applied for from 1927-30. Nos. 1,936,585-590. Henry Dreyfus, London, Eng.

Process for esterifying cellulose compound containing esterifiable hydroxyl groups. No. 1,936,976. Franz Becker, Dessau, Germany, to IGF.

Tubing with flexible casing and lining of metal-coated cellulose film. No. 1,937,069. Leopold Rado, Berlin, Ger.

Forming seamless cellulose tubing by extruding process. No. 1,937,225. A. G. Hewitt, to The Visking Corporation, Chicago.

Plastic composition of a cellulose derivative and an N-alkylol sulfamide of benzene. No. 1,937,280. Ledru, Bidaud, and Berger, France, to duPont & Co., Wilmington, Del.

Article capable of absorbing moisture, new product, semi-rigid, with tensioned wrapper of regenerated cellulose, which holds form when part of article has been removed. No. 1,937,468. W. F. Talbot, to Samson Cordage Works, Boston.

Process for synthetic lumber from cornstalk fiber with corrosive sublimate injected against insects. No. 1,937,366. O. R. Sweeney, to Iowa State College of Agriculture, Ames, Iowa.

Protective cellulose caps for tubes with contact prongs, as temporary shield for bases in electrical circuit. No. 1,937,516, 1,937,537 and 538. R. E. T. Haff, Herbert E. Walther and H. H. Wright, all to duPont Cellophane Co., N. Y.

Manufacture of artificial materials from cellulose compounds—halogen on cell. zanthate. No. 1,938,032. Leon Lilienfeld, Vienna, Austria.

Process for new cellulose derivatives; alkali with alkylisothiocyanate as agent. No. 1,938,033. Leon Lilienfeld, Vienna.

Nitro-cellulose film for counteracting impairment of transparency in softening "glassine" paper. No. 1,938,133. R. C. Charron & W. E. Swift to U. S. Envelope Co., Springfield, Mass.

Later steps in process for insect-proof synthetic lumber. Original application, June '29. Grant May, '31. New grant 1,938,227. O. R. Sweeney to Iowa State College of Agriculture, Ames, Iowa.

Cellulose ester manufacture, blending unhydrolyzed fibre. 13 claims. No. 1,938,299. Geo. A. Richter to Brown Co., Berlin, N. H.

Mercerizing cellulose in caustic alkali, with final treatment by an organic halide, to produce alkyl ethers of cellulose. No. 1,938,360. David Traill, Scotland, to Imperial Chemical Indus., London.

Fibrous materials made non-inflammable, by dichlorinated naphthalene. No. 1,938,746. R. Engelhardt, to I. G. F., Frankfurt.

Photographic film base with water-soluble cellulose derivative coating. No. 1,939,171. K. C. D. Hickman, to Eastman Kodak Co.

Plastic cellulosic material picture film support, for dye transfer of motion pictures. No. 1,939,219. C. E. K. Mees, to Eastman Kodak Co.

Methanol-acetone-ethanol baths for rendering cellulose nitrate products translucent. No. 1,939,244. C. S. Webber & C. J. Staud, to Eastman Kodak Co.

Cellulose carrying 5-200% of sulfur, fine mesh, as material for manufacture of pressed cellulose articles. No. 1,939,404. A. Nagelvoort, to Delaware Chem. Engineering Co., Wilmington.

Coatings

Lacquer having as ingredients nitrocellulose and products of a terpene alcohol having one double bond. Original appl., '28. No. 1,935,917. L. P. Rankin, Dover, to Hercules Powder Co., Wilmington, Del.

In making varnishes and priming compounds, the reaction between blown linseed, sulfur chloride, thinner and drier. No.

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1,936,230. E. W. Frenkel & A. Brust, Germany, to Pittsburgh Plate Glass Co.

Solution of a phosphate of a triethanolamine ester of fatty or resin organic acid, with drying oil, as coating composition. No. 1,936,534. H. O. Albrecht, Michigan, to duPont & Co., Wilmington, Del.

Lacquer free from water-miscible elements and forming an unclouded film after evaporation of such volatiles as nitrocellulose, water, butyl acetate, toluol, ester gum and tricresyl phosphate. No. 1,936,989. Appl. 1927. Garrett H. Peters, to Hercules Powder Co., Wilmington.

Containers for viscous material and for inert thickening matter, both served by air pressure in apparatus for coating surfaces. No. 1,936,997. J. E. String, to The Vortex Mfg. Co., Cleveland.

Fine texture calcined titanium oxide, from deflocculating and elutriating suspended pigment. No. 1,937,037. M. L. Hanahan to Krebs Color & Pigment Co., Newport, Del.

Architectural lacquer system—for bare plaster. Brushing lacquer topping undercoat of casein containing coating. No. 1,937,484. C. Bogin to Commercial Solvents, Terre Haute.

Dissolving process in alkali for preparing shellac-like resins from agatho-copal resins. No. 1,938,468. J. Scheiber, Leipzig, to Walter Dux, Hanover, Germany.

Coating composition comprising polymerized vinyl ester and one of Chinawood, linseed, perilla or hempseed oils. No. 1,938,662. W. E. Lawson, to duPont & Co., Wilmington.

Laminated

Laminated glass product and method of manufacture. No. 1,936,044. James F. Walsh, to Celluloid Corp., Newark.

Lamination of at least one glass sheet and film from at least two unsaturated organic compounds. No. 1,937,323. H. T. Neher & C. S. Hollander to Rohm & Haas, Phila.

Process and apparatus for laminated glass, with separate chamber and pressure means for the plastic material. No. 1,937,396. George B. Watkins, to Libbey-Owens-Ford Glass Co., Toledo.

Machinery

Molding method under sustained pressure and with simultaneous cooling, for plastic material especially of thermo-plastic bituminous character. No. 1,935,794. H. D. Geyer, to Inland Mfg. Co., Dayton.

Apparatus for forming fiber sheets from substantially viscous stock. No. 1,939,518. H. W. Piquet, to MacAndrews & Forbes Co., Camden, N. J.

Miscellaneous

Bakelite-impregnated insulated coil, in photo-electric plate for television. No. 1,935,650. H. J. McCreary, to Ass'd Electric Labs., Inc., Chicago.

Emulsifying the hydrocarbons with aqueous viscous solution, in process for manufacturing synthetic rubber. No. 1,935,733. E. Tschunkur & W. Bock, to I. G. F., Frankfurt, Germany.

Top, bottom plates and partitions of plastic material, in vertically wound gramophone horn. No. 1,935,869. C. Yoshizawa, Tokyo, Japan.

Method of molding base for vacuum tube, with inserts. No. 1,935,942. Benjamin F. Conner, to Colt's Patent Fire Arms Mfg. Co., Hartford.

Terminal contact insert for molded vacuum tube base, No. 1,935,943. (Originals for both, May 1926). Benjamin F. Conner, to Colt's Patent Fire Arms Co., Hartford.

Molded insulating material to form lamp socket cluster, with plurality of intersecting socket openings. No. 1,936,423. E. Clemence, to Monowatt Electric Co., Bridgeport.

Hinge connection for molded receptacles or the like. No. 1,936,465. C. H. Whitlock, to Norton Labs., Lockport, Conn.

Synthetic resin of cresol, formaldehyde and colophony, used with five other elements, in a composition for producing imitation leather finishes. No. 1,936,913. D. M. Philippi, to The Kay and Ess Chem. Corp., Dayton, O.

Wood flour, comminuted cellulosic material and soluble binder,

as a pencil sheath composition. Separate patent for method of manufacture. Nos. 1,937,103-4. J. E. Thomsen, to Joseph Dixon Crucible Co., Jersey City.

Moldable material, fibrous, with hardwood pitch binder (thermoplastic), and method for laminated sound records. No. 1,937,680. H. J. Billings, to Arthur D. Little, Inc., Cambridge, Mass.

Esterification product, polyhydric alcohol, monohydric alcohol and a polybasic acid. No. 1,938,791. W. C. Arsem, Schenectady, N. Y.

Cone diaphragm, large area type, many united cones being impregnated and cemented by a resin material. No. 1,939,447. M. Honig, Berlin, to General Electric Co.

Phenol

Process for manufacture of phenol from aromatic hydrocarbon halides. No. 1,936,567. W. Rittler, to Chemische Fabrik Heyden A. G., Radebeul, Germany.

Coal tar oil method of removing phenols from containing liquors. No. 1,937,941. C. E. Braun, Burlington Vt., to The Barrett Co., N. Y.

Substituted halogen-phenols. Nos. 1,938,911-2. Emil Klarman, Jersey City, to Lehn & Fink Bloomfield, N. J.

Phenol condensation product for impregnating kraft paper mass, with wood flour, under heat and pressure, forming insulating material. No. 1,938,917. Emil C. Loetscher, Dubuque, Iowa.

Sulfuric acid purification of phenolic bodies. No. 1,939,591. C. O. Henke, to du Pont & Co., Wilmington. R. F. Dickson, Leominster, Mass.

Pyroxylin

Decorated plastic sheeting. No. 1,936,351. R. F. Dickson, Leominster, Mass., to Dupont Viscoloid Co., Wilmington, Del.

Seasoning pyroxylin sheet, by ethyl acetate, naphtha and drying. No. 1,937,687. G. J. Esselen & I. Weber, Swampscott, to Fiberloid Corp., Indian Orchard, Mass.

Resins

Artificial resins from olefine benzenes and unsaturated ketones. No. 1,937,063. Meisenburg, Bock & Bachle, to I. G. F., Frankfurt, Germany.

Fusible and oil-soluble resin, from polyhydric alcohol-natural resin, glycerol with cracked rosin or glyceride of a resin acid and certain fatty acids. No. 1,937,533. I. Rosenblum, Jackson Heights, N. Y.

Resinifying mixture of an ester, tri-phenyl phosphate and tricresyl phosphate, with one of 4 metallic oxides, to make synthetic resin. No. 1,938,642. A. Runyan, Valparaiso, to Sinclair Refining, N. Y.

Urea

Separation of unconverted ammonium carbamate from the melt, in the synthesis of urea from ammonia-carbon dioxide heating. No. 1,937,116. H. C. Hetherington, to duPont & Co.

Vinyl

Rubber-like mass carrying styrol polymerizates. No. 1,938,730. E. Tschunkur & W. Bock, to I. G. F., Frankfurt, Germany.

Hydrogen or methyl with heat or emulsion polymerizate from vinyl benzene hydrocarbon, resulting in rubber-like mass. No. 1,938,731. E. Tschunkur & W. Bock, to I. G. F., Frankfurt, Germany.

Vinyl-naphthalene polymerizates as rubber-like mass, about 45% vinyl. No. 1,938,751. Meisenburg, Werk & Bock, to I. G. F., Frankfurt, Germany.

Process for preparing vinyl chloride. No. 1,934,324. G. A. Perkins, West Va., to Carbide & Carbon Chemicals Corp., N. Y. City.

Vinyl resin from polymerizing vinyl chloride with vinyl ester of a lower fatty acid. No. 1,935,577, application May, 1928. Ernest W. Reid, Pittsburgh, to Carbide & Carbon Chemicals Corp., N. Y. City.

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